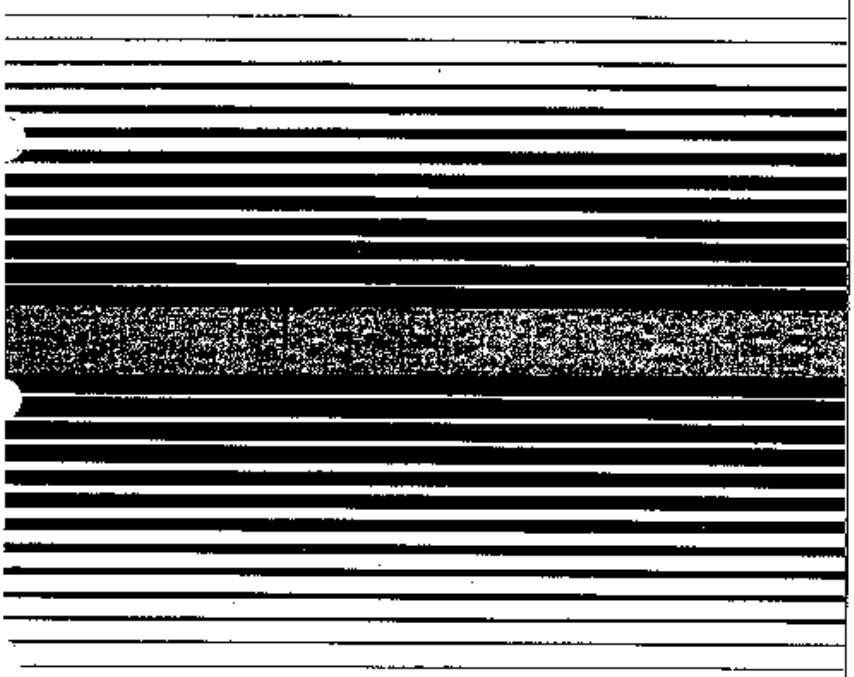
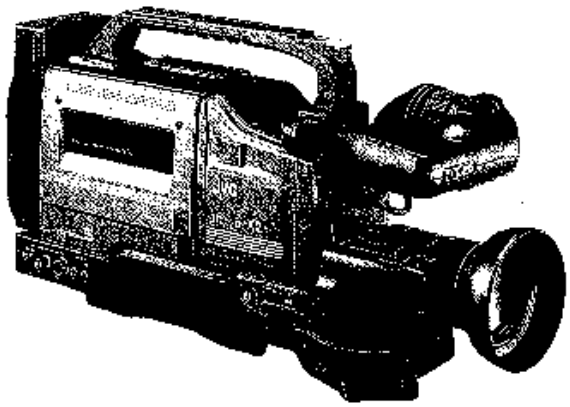
JVC Instructions

3-CCD COLOR VIDEO CAMERA WITH S-VHS VTR

GY-X2





The photograph shows the GY-X2 video camera with an optional lens (YH13X7.5K12).

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For **Customer Use:**
Enter below the Serial No. which is located on the top frame. Retain this information for future reference.

Model No. GY-X2

Serial No.

WARNINGS

CAUTION
RISK OF ELECTRIC SHOCK.
DO NOT OPEN
CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK,
DO NOT REMOVE COVER (OR BACK).
NO USER-SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

The lightning flash with arrowhead symbol, within an equilateral triangle is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

Due to design modifications, data given in this instruction book are subject to possible change without prior notice.

WARNING:
TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE.

AVERTISSEMENT:
POUR EVITER LES RISQUES D'INCENDIE OU D'ELECTROCUTION, NE PAS EXPOSER L'APPAREIL A L'HUMIDITE OU A LA PLUIE.

LITHIUM BATTERY REPLACEMENT MARKING
REPLACE BATTERY WITH MATSUSHITA ELECTRIC (OR PANASONIC) CR2025. USE OF ANOTHER BATTERY MAY PRESENT A RISK OF FIRE OR EXPLOSION.

LITHIUM BATTERY DISPOSAL MARKING
WARNING – THE BATTERY USED IN THIS DEVICE MAY PRESENT A FIRE OR CHEMICAL BURN HAZARD IF MISUSED. DO NOT RECHARGE, DISASSEMBLE, HEAT ABOVE 100°C (212°F) OR INCINERATE.
DISPOSE OF USED BATTERY PROMPTLY.
KEEP AWAY FROM CHILDREN.
DO NOT DISASSEMBLE AND DO NOT DISPOSE OF IN FIRE.

Information for Canada
This product complies with D.O.C limits (C.R.C., C. 1374) pertaining to class B digital apparatus.

Renseignement pour Canada
Ce produit est conforme aux normes du M.D.C. (C.R.C., ch. 1374) s'appliquant aux appareils numériques de classe B.

POWER SYSTEM
This color video camera should be used with 12 V DC only.

CAUTION:
To prevent electric shocks and fire hazards, do NOT use other than specified power source.

Système d'alimentation
Cette caméra vidéo couleur ne doit être utilisée que sur tension continue de 12 V.

Attention:
Pour éviter tout risque d'incendie ou d'électrocution, n'utilisez aucune autre source d'alimentation.

Changes or modifications not approved by JVC could void the user's authority to operate the equipment.

CONGRATULATIONS

Thank you for purchasing the JVC GY-X2 3-CCD Full Size Professional S Camcorder.
To gain maximum benefit from the camera, it is suggested that you study this booklet carefully. After reading, retain it for future reference.

FEATURES

- S-VHS High-Resolution Pictures
  S-VHS recording circuitry for high-quality pictures with horizontal resolution of more than 400 lines.
- HI-FI Stereo Sound
  With rotary FM Hi-Fi audio heads, the GY-X2 offers Hi-Fi stereo sound recording with superior frequency response, greater dynamic range, and improved wow & flutter performance. 2-channel linear audio with Dolby* noise reduction system is also provided.
  * Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corportion. "DOLBY" and the double-D symbol are trademarks of Dolby Laboratories Licensing Corporation.
- Rugged Diecast Body
  Rugged integrated construction with newly-designed diecast aluminum body for improved durability and reliability.
- Easy-to-see LCD Panel with Backlight
  A built-in LCD panel is provided for display of tap time/tape counter, remaining tape time, audio levels, battery duration, hour meter, warning indications. Backlight capability allows easy checking even in dimly-lit places.
- Rotary erase head and AEF function permit noiseless assemble editing.
- Auto Review function for quick recording review
- Insert recording function for replacing video and Hi-Fi sound on a pre-recorded tape
- Built-in speaker for sound monitoring.
- With the optional SA-R200 time code generator, time code recording is possible.
- JVC utilizes newly developed broadcast 1/2 inch CCDs with high 650 line resolution, high sensitivity of F7 at 2000 lux and a superb signal to noise ratio of 60 dB at 0 dB gain (for U version), 58 dB at 0 dB gain (for E version)

- LOLUX captures scenes never before possible because of low lighting conditions.
  In this mode the CCD chip is maximized for low light sensitivity. This Super Sensitivity is ideal for special shooting conditions with almost no lighting.
  Good color balance is maintained even down to 3 lux illumination.
- Quick record mode for emergency recording with a single touch of a button. Exposure is controlled automatically with variable shutter, gain and iris. White balance is also continuously adjusted.
- New Auto Iris Detection Circuit
  Newly developed multi-zone iris detection circuit ensures optimum iris position even in backlit conditions or when a bright subject moves in a frame. Over-under level switchable.
- Electronic shutter with speeds of 1/100 (1/120, for E version), 1/250, 1/500, 1/1000 and 1/2000 second
- Safety Zone Indication
  In addition to center mark on/off capability, safety zone indication for the 16 : 9 screen format is available.
- Zebra pattern video level indication
- The audio level is indicated in the viewfinder.
- Highly reliable XLR connectors for audio input. Input circuit utilizes balanced input system that is less affected by external noise.
- Retake function with edit searching for easy checking of recordings at normal speed
- Built-in genlock circuit for system synchronization
- With its dual output system, the camera output can be connected directly to an external recorder.
- Y/C output connector
- Earphone jack
- Color temperature conversion filters for "3200 K", "5600 K" and "5600 K + ND"
- Variable scan.
  Flicker bars in the display image of computer monitors are caused by the differing scan rate of the computer monitors. The Variable Scan function can minimize this effect by tuning the camera shutter speed to the precise scan rate of the display screen. The small increments range from 60.2 Hz to 1966.7 Hz (1/60.2 sec to 1/1966.7 sec) for U version.
  The small increments range from 50.2 Hz to 1953.1 Hz (1/50.2 sec to 1/1953.1 sec) for E version.

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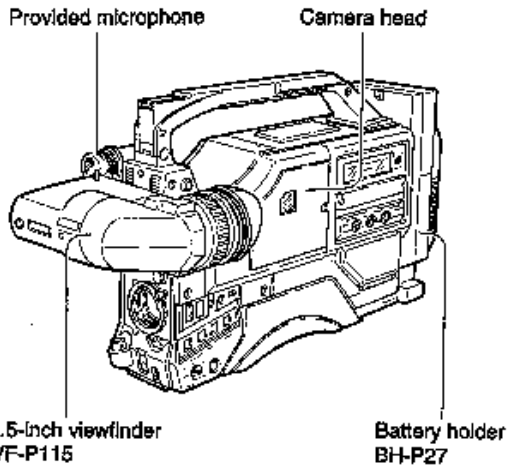
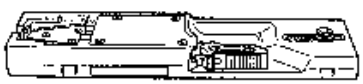
SYSTEM CONFIGURATION

The standard configuration of the GY-X2 is as shown below.

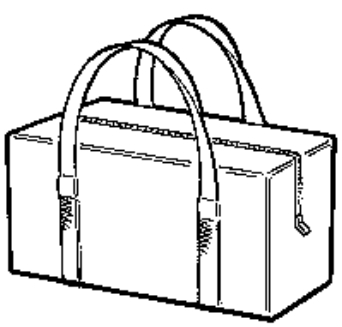
STANDARD CONFIGURATION



Tripod base KA-510



Carrying bag



PRECAUTIONS

SAFETY PRECAUTIONS

- Use only the optional NB-G1 Battery Pack or the optional AA-P250 AC Power Adapter.
- Do not modify the unit or operate it without cover panel to prevent danger.
- When there is any abnormality (abnormal noise, smell, smoke, etc.) with the unit, immediately turn the power off and contact your nearest JVC-authorized service agent.
- Do not damage or fray the power cord. Otherwise, this will cause leakage or electrical shock.
- If the camera is not going to be used for an extended period of time, leave the power cord disconnected for reasons of safety.
- If there is a danger of being struck by lightning during outdoor shooting, evacuate to a safe place immediately.

HANDLING PRECAUTIONS

- Supply voltage
  Make sure that the power is between 11.5 V and 15 V DC. If the power voltage is too low, abnormal color and increased noise could occur. Do not exceed 15 V DC in any case, or the unit could be damaged.
- Where there are strong electromagnetic waves or magnetism, for example near a radio or TV transmitter, transformer, motor, etc., the picture may contain noise and the colors may be incorrect.
- When a wireless microphone or wireless microphone tuner is used near the camera, the tuner could pick up noise. In such a case, select another channel.
- Cleaning the body: Wipe body with a dry, soft cloth (such as cheesecloth). When it is extremely dirty, soak the cloth in a solution of neutral detergent, wring it out and then wipe.
  To prevent deformation of the body, etc. and to avoid operation hazards, do not allow volatile liquids such as benzine and thinner to touch the body, and do not wipe it with a cloth soaked in such a liquid.
  If the equipment is soiled with water, oil, solvent, etc., wipe over with soft cloth or cotton first, then clean with gauze, etc. soaked in denatured alcohol.

VTR

- Influence of vibrations
  When tapes are played back in a place subject to excessive vibrations, color pictures may not be obtained.

- **Moisture condensation prevents use of the unit.**
- You have observed that pouring a cold liquid into a glass will cause drops of water to form on the glass's outer surface. This same phenomenon occurs on the head drum of a video recorder when the recorder is moved from a cool place to a warm place, after heating in a cold room, under extremely humid conditions or in a place directly subjected to the cool air from an air conditioner.
- Moisture on the head drum can cause severe damage to the video tape, and can lead to internal damage to the recorder itself.
- If moisture condensation occurs on the head drum, a condensation warning appears in the recorder LCD and the unit enters the Stop mode, unable to function. In such a case, wait for a few hours until the indicator disappears.

Operate Off Circuit with Battery Operation

- When the battery is depleted in battery-powered operation, the OPERATE indicator starts blinking with red color and a warning beep is heard from the earphone. If you continue operation, the Operate Off function is executed automatically to protect the unit. If this happens, replace the battery with a fully-charged one.
- If the Operate Off function is activated in the Record-Pause mode, the tape remains loaded due to the auto recording lock function.

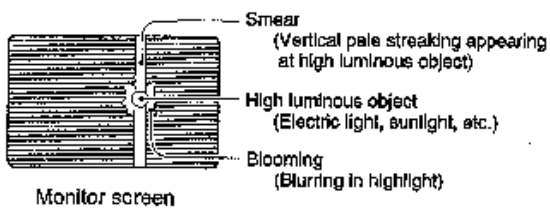
LENS

- The camera lens should be protected externally with a Clear or UV filter against accidental scratching, touching or dirt. The external lens cap should be used whenever possible.
- When the lens is changed, take special care to avoid contaminating the inner lens surface and camera gate/optical block area with moisture or dust.

CAMERA

CCD Smear and Blooming

- Due to the physical structure of the CCD in this camera it is possible to induce vertical streaking or smear when shooting an extremely bright light source.
- Another effect is the expansion of light around a bright light or object called Blooming.
  Just as you protect your image against lens flare (internal lens reflections); please be careful when shooting a bright light source.



Monitor screen

Gain, Noise

- Higher levels of output gain result in a decrease in the signal to noise ratio, possibly resulting in a noisy picture.

Moire or Aliasing

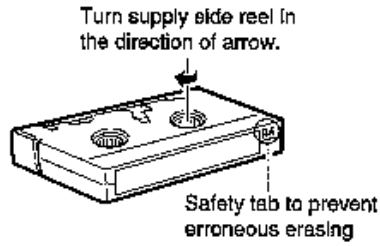
- Shooting stripes or fine patterns may cause a jagged effect or a banding in fine mesh patterns.
  Try repositioning the lens zoom to change the frequency of the detail information and eliminate the distortions.

High Temperatures

- High temperatures can cause CCD sensor pixels to malfunction with the effect of white dots in the image. This condition could damage the CCD, and certainly raises the "fixed pattern" noise level that CCDs have thus giving a noisy picture.

VIDEO CASSETTE HANDLING

- The GY-X2 employs only cassette carrying the S-VHS and the VHS marks.
- Recording onto prerecorded tapes automatically erases the previously recorded video and audio signals.
- An inverted cassette cannot be inserted.
- Do not load and unload the cassette repeatedly without allowing the tape to run at all. This will slacken the tape and thereby damage it.
- Make certain before loading the cassette that the tape is not slackened. If there is any slack, turn the supply gear on the cassette in the direction of the arrow to take up slack.
- The cassette is equipped with a safety tab to prevent accidental erasure. When the tab is removed, recording is impossible. If you wish to record on a cassette whose tab has been removed, use adhesive tape to reseal the slot.
- To avoid excessive exposure to dust and fingerprints, do not open the front tape cover.
- It may not be possible to record on the first 5-second section of a new tape due to winding margin.



Storage of Cassettes

- Avoid exposing the cassettes to direct sunlight, keep them away from heaters.
- Avoid storing the cassettes in humid or dusty places.
- Do not drop the cassettes. Do not expose them to violent vibrations or shocks.
- Do not expose the cassettes to strong magnetic fields (near a motor, transformer or magnet).
- Place the cassettes in cassette cases and position them verttically.

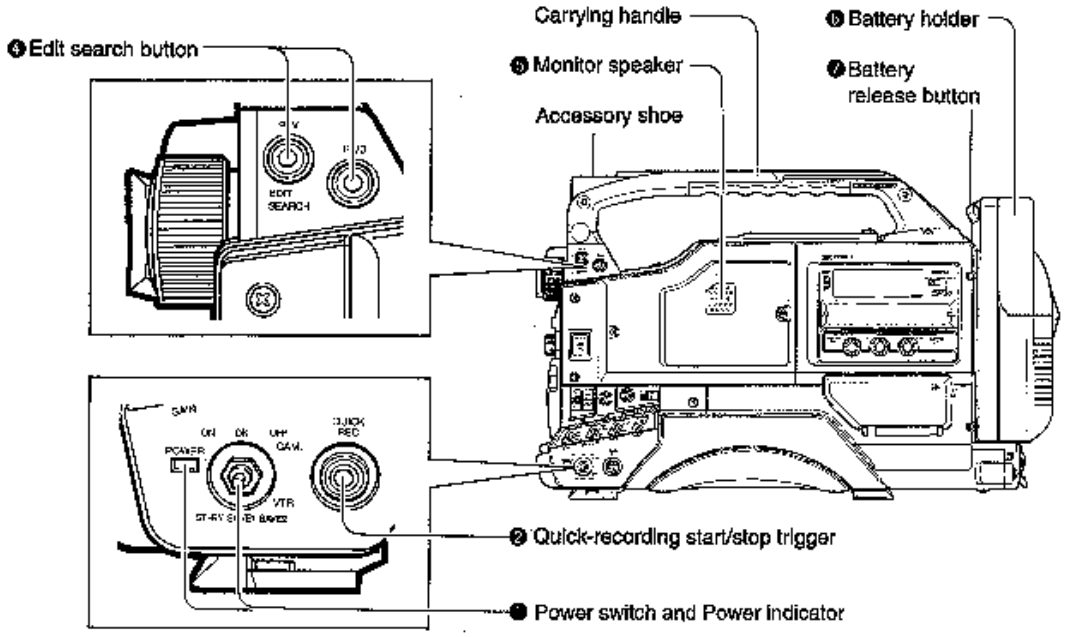
Tape Protection

- Do not leave the unit in the Record-Pause mode for too long to avoid discharging the battery and to protect the tape.
- When using this unit as a camera alone, remove the cassette to protect the tape.
- To protect the tape in the Record-Pause mode, tape tension is slackened automatically and, after about 30 minutes, drum rotation stops and then, "OPERATE" LED will be blink with green color.
- To re-start recording, press the REC button, or turn the camera section's operation switch in the order of "VTR ST-BY" – "SAVE1" – "ST-BY" to engage the Record-Pause mode.
- During extended still playback, tape action is as follows.

Elapsed time	Tape movement
Approx. 3 min. 30 sec.	Advances a few frames.
Approx. 7 min.	Advances a few frames.
Approx. 10 min. 30 sec.	Stops completely.

CONTROLS, INDICATORS AND CONNECTORS

OVERVIEW



❶ Power switch and Power indicator

Switches the camera section's power on/off and switches the VTR section's power save modes.

Position		Power indicator	Camera	VTR	Recording	Quick recording	VTR display
CAM	VTR						
ON	ST-BY	Lights	Yes	REC PAUSE	Yes	Yes	Yes
ON	SAVE 1	Lights	Yes	STOP	No	Yes	Yes
OFF	SAVE 2	Off	No	STOP	No	No	No

❷ [QUICK REC] Quick-recording start/stop trigger

Use this button as a quick-recording start/stop trigger.
Recording starts immediately when this button is pressed, with ALC and auto-iris forcibly engaged. White balance will also be automatically adjusted accordingly. In this mode, the electronic shutter and variable scan mode cannot be used. Variable shutter is automatically engaged.
Pressing this button again or button ❸ releases the quick-recording mode and engages the Record-Pause mode. Use this function only in an emergency.

Allow 10 seconds or more after the power has been switched on, otherwise this function will not operate correctly.

❸ [VTR] Recording start/stop trigger

Use this button located on the camera head front section and the lens as a normal shooting start/stop trigger.
Recording will start about 2 seconds after the button has been pressed. Pressing it again engages the Record-Pause mode. (See illustration on next page.)

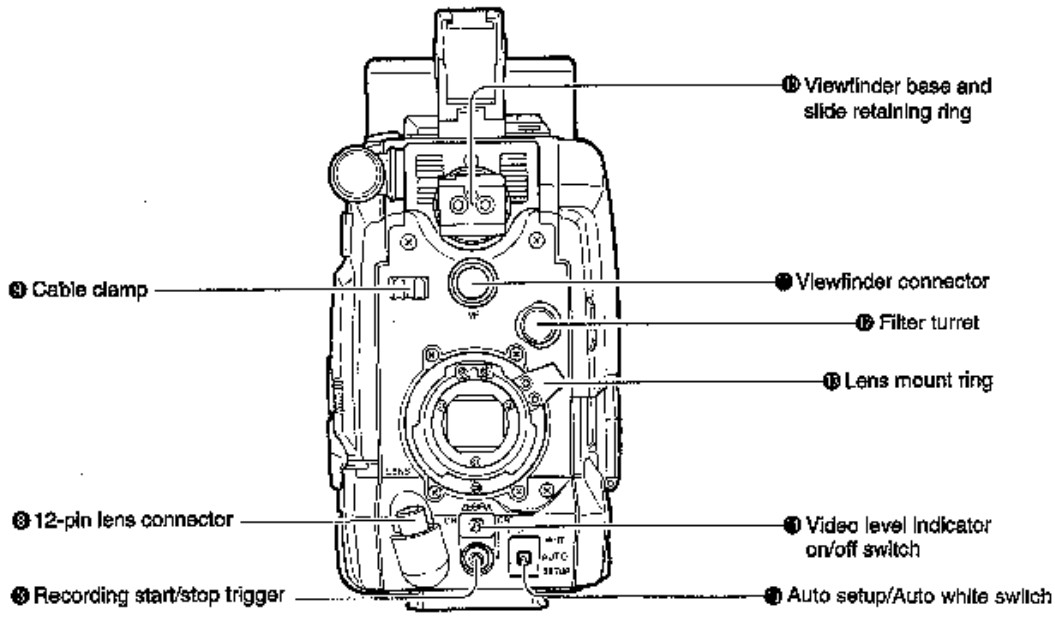
❹ [EDIT SEARCH] Edit search retake buttons

Allows forward or reverse search while in the Record-Pause mode. Use this function to determine the start point of a retake. The search picture can be viewed on the viewfinder screen.
REV : For reverse search
FWD : For forward search

❺ Monitor speaker

Outputs sound according to the setting of the AUDIO INPUT SELECT, AUDIO OUT, and MONITOR OUT switches. In the Playback mode, the tape's playback sound can be monitored. Sound level can be adjusted by the MONITOR LEVEL control. Warning beeps are also emitted from this speaker together with the monitor sound. (Warning sound level cannot be adjusted.)
Connecting an earphone to the EARPHONE jack defeats sound output from the speaker.

CAMERA HEAD FRONT SECTION


⓫ Viewfinder base and slide retaining ring
❽ Cable clamp
⓬ Viewfinder connector
⓮ Filter turret
⓭ Lens mount ring
❼ 12-pin lens connector
⓯ Video level indicator on/off switch
❻ Recording start/stop trigger
⓰ Auto setup/Auto white switch

❺ Battery holder
Shown here is the standard battery holder. This can be used for Flat shape type and JVC NB-G1 batteries.
The 4-pin 12 V DC connector has priority over this battery holder.
Other manufacturer's battery holders can be attached instead.

❹ Battery release button
Open the cover while this button is pressed.

❸ [LENS] 12-pin lens connector
For use with a lens having a 12-pin connector.

Pin No.	Function	Pin No.	Function
1	RET switch	7	IRIS position
2	VTR start	8	—
3	GND	9	—
4	LENS AUTO	10	—
5	IRIS control	11	—
6	12 V DC	12	—

❽ Cable clamp
For fixing lens cable, etc.

⓫ Viewfinder base and slide retaining ring
Attach the VF-P115 viewfinder to this base and secure it with the slide retaining ring.

⓬ [VF] Viewfinder connector
Connect the viewfinder cable.

⓮ [FILTER] Filter turret
Selects the filter setting for color conversion and ND.
1. **(3200K):** For shooting indoors, or outdoors when illumination is insufficient.
2. **(5600K):** For shooting outdoors.
3. **(5600K and ND filter):** For shooting outdoors on sunny days.

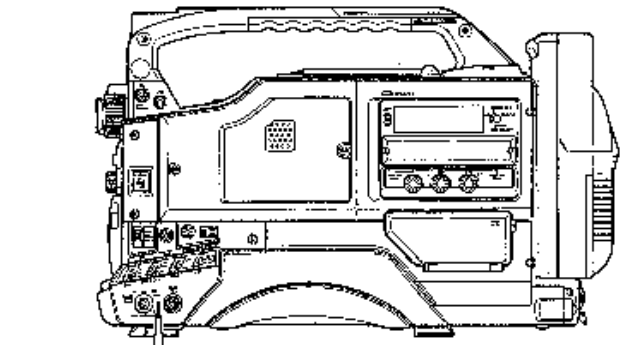
⓭ Lens mount ring
For retaining the lens.

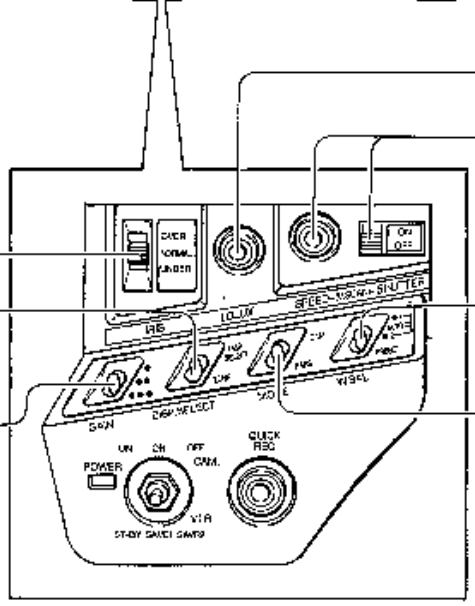
⓯ [ZEBRA] Video level indicator on/off switch
Set this to ON to obtain the video level indication on the viewfinder screen.

⓰ [AUTO] Auto setup/Auto white switch
Push the switch toward "WHT" or "SETUP" to initiate the auto setup procedure. The switch need not be pushed continously.
WHT : For automatic adjustment of white balance only.
SETUP : For successive adjustment of black balance, white balance, and black balance again.
Adjustment of black balance only is also possible in the SETUP position.

- Service Information:
"•••" position can be alloted to "ALC" (Auto Level Control) by changing the internal switch setting.
For detail, refer to "1.6.1 Switches on CP board - ⑥ ALC/FAW switch" in page 1-4 of the service manual.

CAMERA CONTROLS




⑯ LOLUX gain button
⑰ Shutter speed/
Variable scan mode select switch
❷ Iris correct select switch
⑲ Status display select switch/
Safety zone select switch
select switch
⑱ Sensitivity select switch
㉑ White balance mode select switch
㉒ Camera/Color bars video select switch

⑱ [GAIN] Sensitivity select switch
Electronically boosts light sensitivity when there is insufficient illumination on the subject.

0 dB : Off
9 dB : Boosted to approximately 3 times as much
18 dB: Boosted to apaproximately 8 times as much

⑲ [DISP. SELECT] Status display mode select
Switches the viewfinder indications of the camera's setting status. Push it up to switch the displays as follows.
→ Display 0 → Display 1 → Display 2

See "Status Display" on page 20.

[ZONE] Safety zone mode select
Selects the safety zone indication on the viewfinder screen. Push it down to switch the safety zone indications as follows. "OFF" (no indication), to "MODE1", "MODE2" and "MODE3".
See "Safety Zone Indication" on page 21.

⓯ [IRIS] IRIS OVER/NORMAL/UNDER switch

IRIS switch can be used to adjust the exposure system to over or under exposure by about a half F stop.

OVER : for continued over exposure
NORMAL : for normal exposure
UNDER : for continued under exposure

Many conditions can cause the detection mode to expose high or low, such as back lit or spot lit situations.

⓰ [LOLUX] LOLUX gain button

LOLUX gain gives extremely low light level sensitivity for special applications. The spec is the equivalent of F1.4 at 3 lux.

LOLUX operation takes priority over normal gain operation. Pressing it again restores the previous mode. In the LOLUX mode, the ALC (automatic level control) in the Quick-recording mode is not available.

⓱ [SPEED - (V. SCAN) - SHUTTER]

Shutter speed button/Variable scan mode select switch

The OFF switch position engages the normal 1/60-second speed. Normally use this speed.

The ON switch position engages selected shutter speeds. Turning the shutter switch ON while pressing the speed button engages variable scan.

Shutter speed button:

Each time this button is pressed, the shutter speed changes to 1/100 (for U version), 1/120 (for E version), 1/250, 1/500, 1/1000, 1/2000, then back to 1/100 second.

1/100 (U ver.) → 1/250 → 1/500 → 1/1000 → 1/2000
1/120 (E ver.)

This removes blurring when shooting fast-moving objects. To return to 1/60 second, press the switch to OFF.

- In areas with a 50 Hz power line, select "1/100" to reduce flickering under fluorescent light. (for U version)
- When powered, the shutter speed remains the same as selected before the power was turned off. When restarting shooting, be sure to check the shutter speed.

Variable scan mode:

- Turning the shutter switch ON while keeping the speed button pressed engages the variable scan mode.
- To change the shutter speed, release the speed button, then press it again. Each time the button is pressed, the shutter speed changes. Keeping the button pressed automatically advances the speed.
- If the power is turned off, the selected shutter speed is retained in memory but the variable scan mode is released. If the mode is required after turning the power on again, first set the shutter switch to OFF, then set back to ON while keeping the speed button pressed.
- This mode is used for shooting images on a computer monitor whose scanning speed is different from the camera's normal shutter speed. This mode covers vertical scanning frequencies ranging from 60.2 Hz to 1966.7 Hz. (for U version), from 50.2 Hz to 1953.1 Hz (for E version). However, it cannot respond to monitors with slower scanning frequencies.

• Service Information:
"AUTO 2" position can be alloted to "FAW" (Full Time Auto White) by changing the internal switch setting.
For detail, refer to "1.6.1 Switches on CP board - ⑨ ALC/FAW switch" in page 1-4 of the service manual.

⓲ [W. BAL] White balance memory select switch

AUTO 1, AUTO 2: White balance is set to the memory automatically ajusted with switch ⓳.

PRESET: White balance is set to the preset standard (corresponding to a color temperature of 3200K with filter control set to 1 and 5600 K when set to 2).

Independent white balance settings can be stored in the AUTO 1 and AUTO 2 positions.

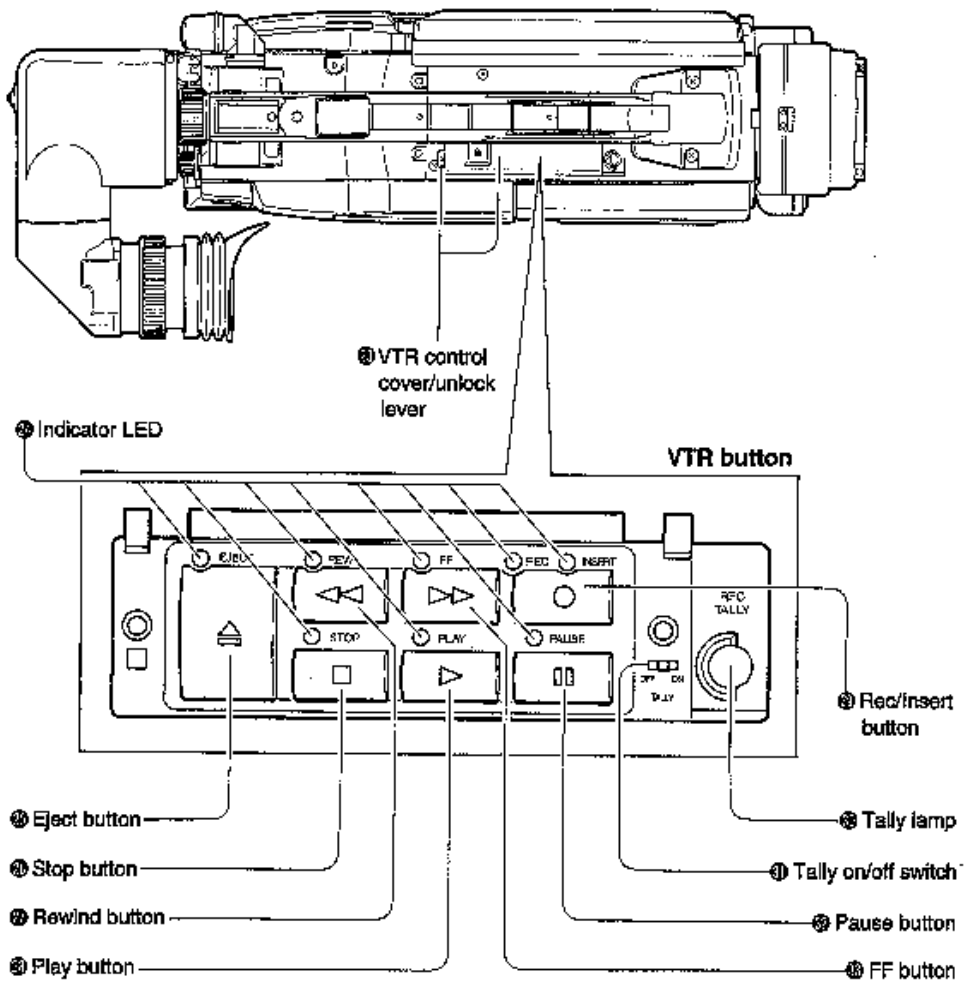
⓳ [MODE] Camera/Color bars select switch

Selects the recording or output signal.

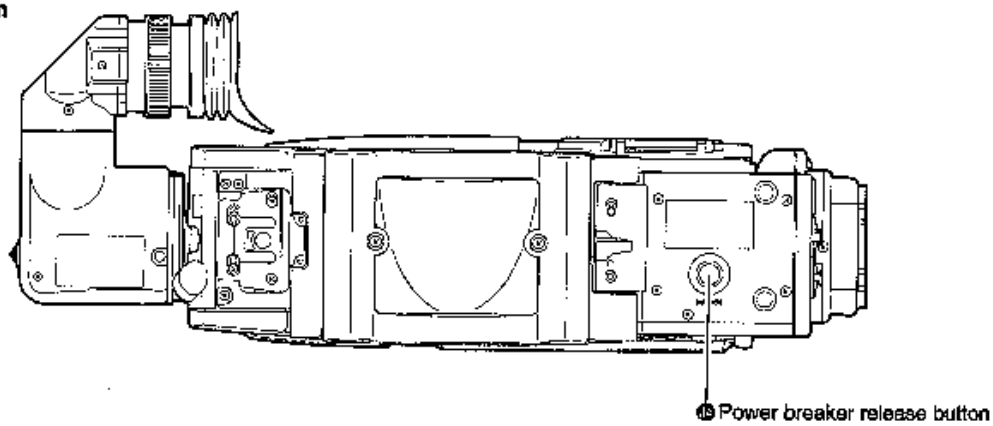
CAM : Camera signal
BARS : Color bars signal

VTR CONTROLS

Top



Bottom



⑱ VTR control cover/unlock lever
This cover prevents accidental operations while shooting and prevents entry of water droplets and dust. To open it, push the cover up while keeping the lever depressed.

⑲ LED indicators
Lights to show corresponding operation status.

⑳ [EJECT] Eject button
Press to eject the cassette. It will take about 10 seconds for the tape to be unloaded and the cassette ejected. Press this button only when the unit is in the Record-Pause and Stop mode.
The cassette cannot be ejected if the power supply is insufficient (too low or no battery power). In such a case, replace the battery pack with a charged one.
The EJECT button can be pressed even when the VTR section is covered. LED indicator blinks while ejection.

㉑ [STOP] Stop button
Press to cancel the Play, FF and REW modes. The tape will stop and the Record-Pause mode will be engaged.
When the cassette is loaded and the unit is in Stop mode, the LED indicator remains lit.

㉒ [REW] Rewind/Search button
Press to rewind the tape. When pressed while in the Play mode, reverse search at 5 times normal speed is engaged.

㉓ [PLAY] Play button
Press to play back the tape. PLAY LED indicator lights while playback operation takes place.
If it is Record-Pause mode, and press PLAY button, the VTR go to "REC" mode.

㉔ [REC-INSERT] Record/Insert button
- **Assemble Record**
Press together with the PLAY button ㉓ to engage the Assemble Record mode. REC and PLAY LED indicators light. Press the STOP button to stop recording. To temporarily stop recording, press the PAUSE button. To re-start recording from the Record-Pause mode, press the PLAY button ㉓.

- **Insert Record**
Press together with the PAUSE button in the Record-Pause mode to engage the Insert-Pause mode. Press the PLAY button to start insert recording (replaces the video and Hi-Fi audio on the tape).
See "Insert Recording" on page 39.

㉕ [REC TALLY] Tally lamp
Lights when recording starts and remains lit while recording. (Goes off when in the Record-Pause mode.)
Blinks for alarm warning.

㉖ [TALLY ON/OFF] Tally lamp on/off switch
ON : Tally lamp lights or blinks.
OFF : Tally lamp does not light.
Set to OFF to save power.

㉗ [PAUSE] Pause button
Press while in the Play mode to stop the tape temporarily; a still picture (with noise) will be obtained. This button has no effect while in the Record mode. Repeated pressing of this button plays back picture in single frame steps.

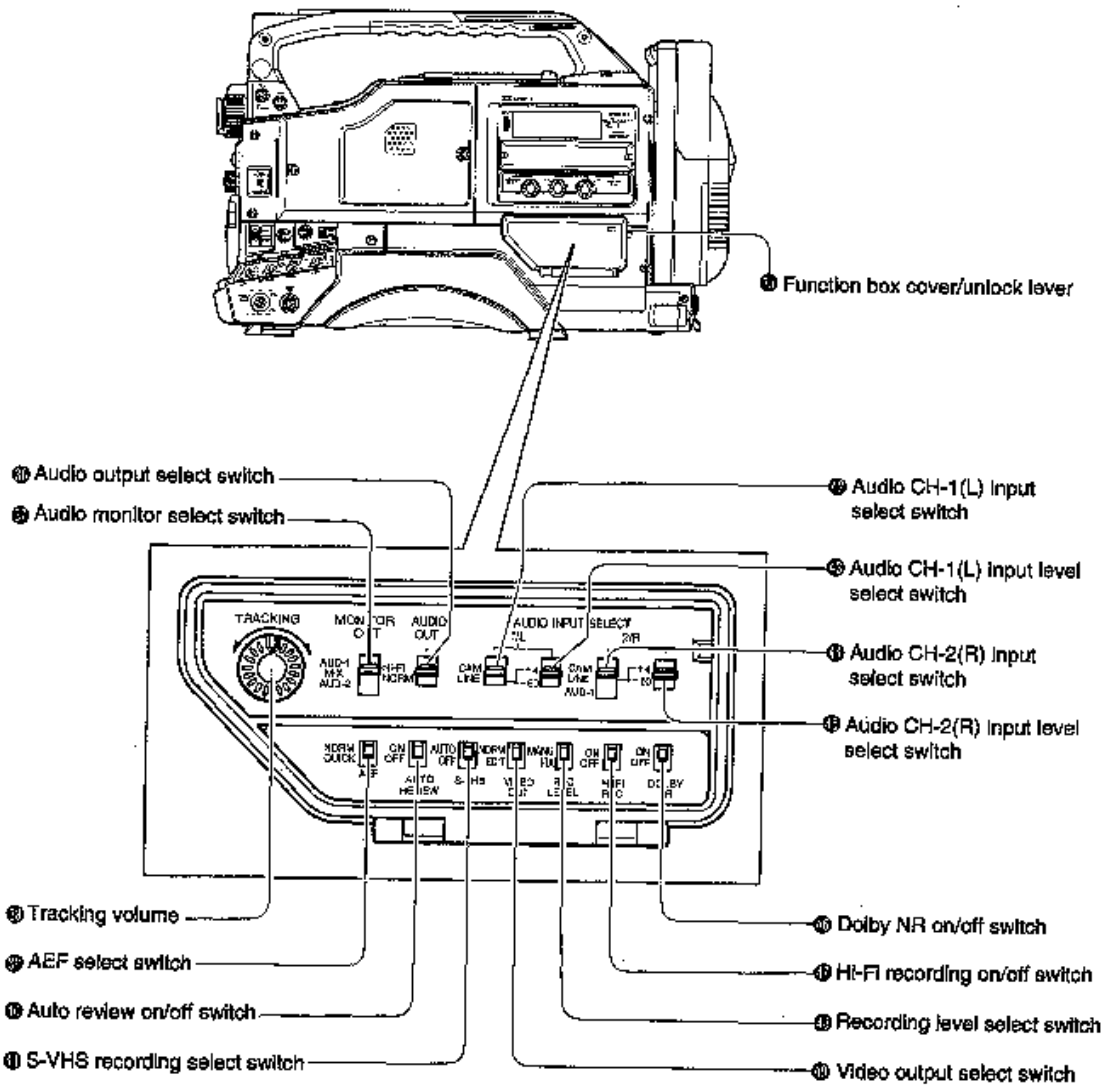
㉘ [FF] Fast-Forward/Search button
Press to fast-forward the tape. When pressed while in the Play mode, forward search at 5 times normal speed is engaged.

Notes for VTR operation
- Because this unit is designed especially for recording, still pictures may have some noise or vibrate vertically. This is not due to any defect of the unit.
- During search, pictures may contain some noise, vibrate vertically, or become monochrome. This is not due to any defect of the unit.
- With a low-capacity power unit, or a power unit whose protective circuit characteristics are not sufficient, the VTR may stop because of a shortage of power. To avoid this, use specified power units.
- No audio is available during search.
- When recording in the VHS mode on a tape previously recorded in the S-VHS mode, it is not possible to search or edit S-VHS recordings.

㉙ [BREAKER] Power breaker release button
If an excessive amount of current flows into the camera, the built-in power breaker is activated to cut the power for circuit protection. If this happens, press this button to re-supply the power.

Notes
- Before re-supplying power, be sure to check the cause of power breakdown and take appropriate countermeasures.
- If the power breaker is activated often, consult your JVC dealer.

VTR SETUP CONTROLS


⑰ Function box cover/unlock lever
⑯ Audio output select switch
⑮ Audio monitor select switch
⑭ Audio CH-1(L) input select switch
⑬ Audio CH-1(L) input level select switch
⑫ Audio CH-2(R) input select switch
⑪ Audio CH-2(R) input level select switch
⑩ Tracking volume
⑨ AEF select switch
⑧ Auto review on/off switch
⑦ S-VHS recording select switch
⑥ Dolby NR on/off switch
⑤ Hi-Fi recording on/off switch
④ Recording level select switch
③ Video output select switch
TRACKING
AUDIO OUT
AUDIO INPUT SELECT

⑰ Function box cover/unlock lever
To open the cover, pull the cover toward you while pushing the lever to the left.

⑯ [AUDIO OUT] Audio output select switch
Selects the audio output, monitor output, and level meter indication.
HI-FI : Outputs Hi-Fi audio.
NORM : Outputs normal audio.

⑮ [MONITOR OUT] Audio monitor select switch
Selects the audio output of the monitor speaker and earphone jack.
AUD1 : To monitor audio channel 1 (L).
MIX : To monitor mixed sound of audio channel 1 (L) and 2 (R). Mixed with each channel at 50 %.
AUD 2 : To monitor audio channel 2 (R).

⑱ [TRACKING] Tracking control
Adjust to minimize the noise in pictures and/or Hi-Fi audio when playing back. Normally, set to the center position.

⑲ [AEF] AEF select switch
NORM : Automatic Editing Function (AEF) is fully activated for preroll assemble editing with clean results. In this position, it takes longer to start recording from the Stop mode.
QUICK: AEF's preroll is partially activated for quick recording start. However, scene transitions may be blurred.
See "Automatic Editing Function (AEF)" on page 38.

⑳ [AUTO REVIEW] Auto Review on/off switch
ON : When the Record-Pause mode is engaged, the tape reverse plays a little, then the rewound portion (approximately 3 sec. worth) is played before entering the Record-Pause mode.
Auto Review is also activated by the lens RET switch.
OFF : The Auto Review function is not available.
See "Auto Review Function" on page 38.

㉑ [S-VHS] S-VHS recording select switch
Selects the S-VHS or VHS recording.
AUTO : Recording mode is automatically selected according to the cassette used. S-VHS is selected with an S-VHS cassette and VHS with a VHS cassette.
OFF : Set to this position to record in VHS regardless of the cassette used.

㉒ [AUDIO INPUT SELECT 1/L CAM/LINE] Audio channel-1 (L) input select switch
CAM : Record L-channel sound from the 6-pin camera microphone input ㉔ .
LINE : Records sound from the XLR 3-pin audio channel-1 (L) input connector ㉕ .

㉓ [AUDIO INPUT SELECT 1/L +4/–60] Audio channel-1 (L) input level select switch
+4 : For +4 dBs line input
–60 : For –60 dBs microphone input

㉔ [AUDIO INPUT SELECT 2/L CAM/LINE] Audio channel-2 (R) input select switch
CAM : Record R-channel sound from the 6-pin camera microphone input ㉔ .
LINE : Records sound from the XLR 3-pin audio channel-1 (R) input connector ㉕ .
AUD-1 : The signal selected by the AUDIO INPUT SELECT 1/L switch is recorded for monaural soundtrack.

㉕ [AUDIO INPUT SELECT 2/R +4/–60] Audio channel-2 (R) input level select switch
+4 : For +4 dBs line input
–60 : For –60 dBs microphone input

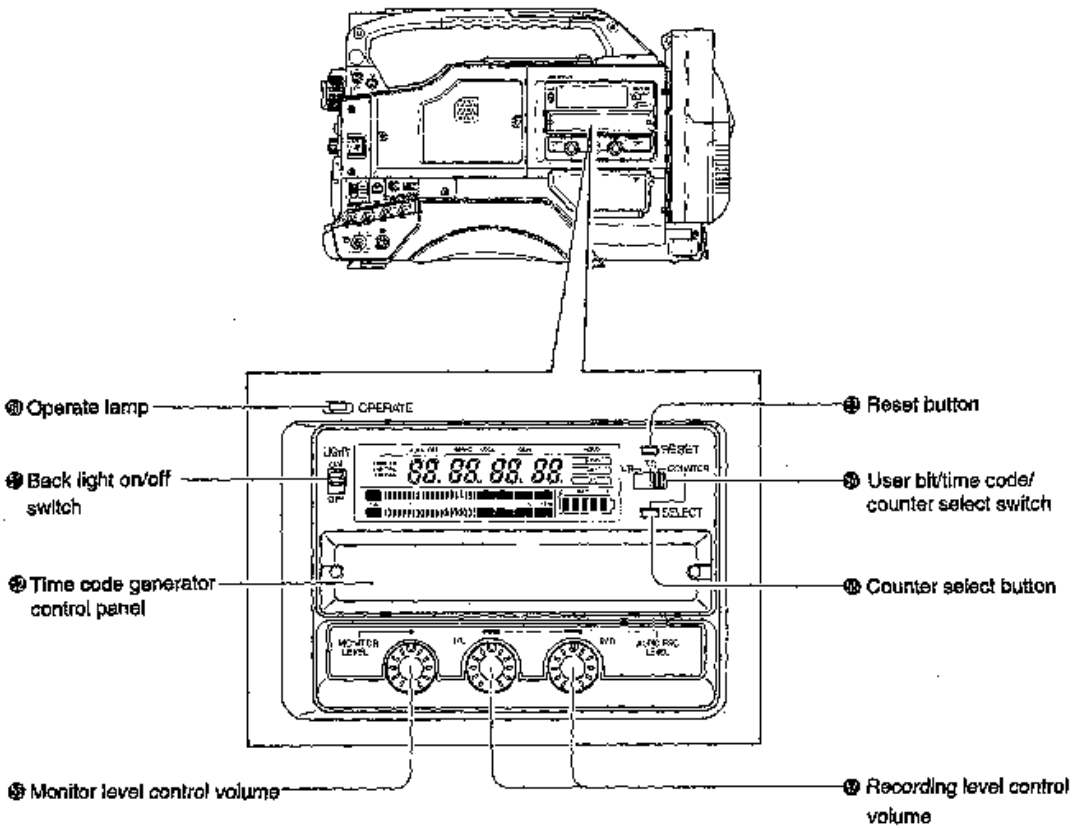
㉖ [DOLBY NR ON/OFF] Dolby NR on/off switch
ON : Dolby NR circuit is activated for normal audio recording and playback.
OFF : Dolby NR is off.
* *Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation. "DOLBY" and the double-D symbol are trademarks of Dolby Laboratories Licensing Corporation.*

㉗ [Hi-Fi REC] Hi-Fi recording on/off switch
ON : For Hi-Fi audio recording.
OFF : Hi-Fi audio recording is not available.

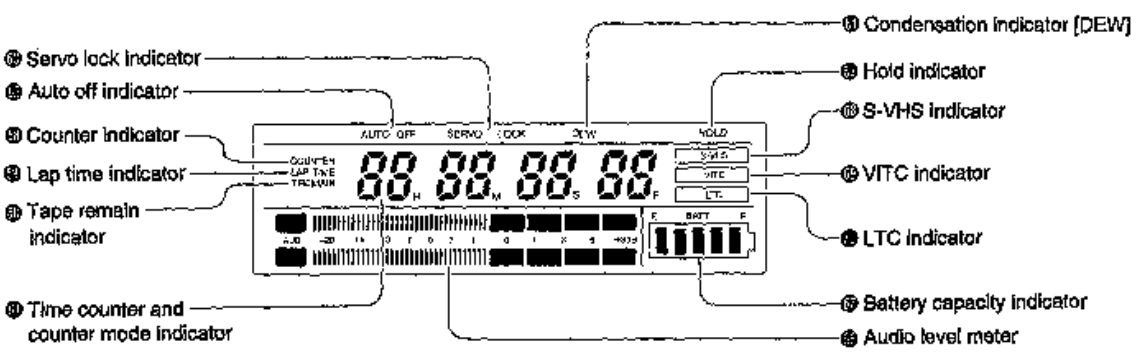
㉘ [REC LEVEL] Recording level select switch
MANU : Recording level of Hi-Fi and normal audio can be adjusted with the AUDIO REC LEVEL control ㉙ .
FIX : The recording level is fixed to the standard gain. When the signal input level is excessive, the limiter is activated to prevent distortion.

㉚ [VIDEO OUT] Video output select switch
NORM : Set to this position normally.
EDIT : When using the unit as a feeder in an editing system, set to this position so that the signal by-pass the noise canceller for less deterioration in tape dubbing.

VTR INDICATORS/AUDIO CONTROL


⑳ Operate lamp
OPERATE
⑭ Reset button
⑰ Back light on/off switch
⑮ User bit/time code/ counter select switch
⑲ Time code generator control panel
⑯ Counter select button
⑱ Monitor level control volume
⑫ Recording level control volume

VTR display panel



⑪ **[OPERATE] Operation lamp**
Operation : Lights green.
Warning : Lights or blinks red.
See "Warning" on page 23.

⑫ **[LIGHT] Backlight on/off switch**
ON : Backlight on.
OFF : Backlight off.

> To save power in battery-powered operation, set to OFF.

⑬ **Time code generator control panel**
When installing the time code generator SA-R200 (optional), remove this cover, and set switches as necessary.
Note: Operation switches inside the cover are effective only when the optional SA-R200 is installed.

⑭ **[RESET] Reset button**
Press to reset the tape counter and lap time readout to 00:00:00:00.

⑮ **[UB/TC/COUNTER] User bit/Time code/Counter select switch**
UB : Displays User Bits.
TC : Displays the time code reading.
COUNTER : Displays tape counter, lap time counter, or remaining tape time according to the setting of the SELECT button ⑯ .

> UB/TC display is available only when the time code generator SA-R200 (optional) is used. When it is not in use, the display shows the counter reading only.

⑯ **[SELECT] Counter select button**
Each time this button is pressed, the display changes as follows.

→ COUNTER → LAP TIME → T. REMAIN →

COUNTER : 4-digit tape counter reading
LAP TIME : Lap time counter reading in hours, minutes, and seconds.
T. REMAIN : Remaining tape time in hours and minutes, in 1 minute increments.
For hour meter display, unload the cassette and press SELECT and REC simultaneously. Hold for about 3 seconds. The display will change to the hour meter reading.
See "Hour Meter Display" in page 40.

⑰ **[MONITOR LEVEL] Monitor level control**
Turn to adjust the sound output from the monitor speaker ⑨ or earphone jack ⑩ . Alarm sound level is fixed and cannot be adjusted by this control.

⑱ **[AUDIO REC LEVEL 1/L, 2/R] Recording level controls**
Turn to adjust the recording level of Hi-Fi or normal audio channel-1 (L)/channel-2 (R), with the recording level select switch ⑲ set to MANU. Adjust the controls so that the peak level shows about 0 dB on the audio level meter ⑭ .

⑳ **[COUNTER] Counter indicator**
Appears when the counter display ⑬ is in the Counter mode.

㉑ **[LAP TIME] Lap time indicator**
Appears when the counter display ⑬ is in the Lap time mode.

㉒ **[T. REMAIN] Remaining tape time indicator**
Appears when the counter display ⑬ is in the Remaining tape time mode.

㉓ **Counter display**
Displays tape counter/lap time/remaining tape time/hour meter. Also displays time code and user bits when the time code generator SA-R200 (optional) is installed.

㉔ **[AUTO OFF] Auto off indicator**
Appears when problems occur with the head drum, capstan, reel rotation, mechanical position, etc.
See "Warning" on page 23.

㉕ **[SERVO LOCK] Servo lock indicator**
Appears when the drum servo or capstan servo is not locked to the input video signal.
See "Warning" on page 23.

㉖ **[DEW] Condensation indicator**
Appears when condensation occurs. At this time, no operation but ejection is possible. Wait for a few hours until the indicator goes off.

㉗ **[HOLD] Hold indicator**
Appears when the HOLD button is pressed with the SA-R200 time code generator installed.
See "TIME CODE GENERATOR SA-R200 (Optional)" in pages 44 to 47.

㉘ **Audio level meter**
Displays Hi-Fi or normal audio level in recording and playback as selected by the audio output select switch ㉙ . 0 dB is the standard level.

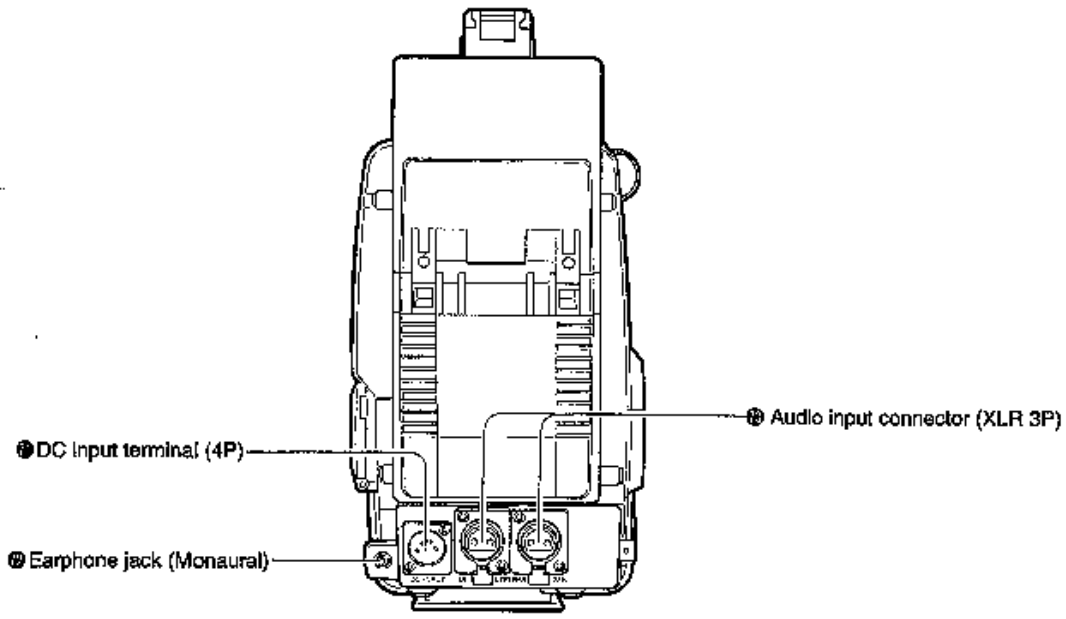
㉚ **[BATT] Battery capacity indicator**
Displays remaining battery time in 5 steps. With a fully charged battery, all blocks are displayed. When the number of blocks drops to about 2, the OPERATE lamp ⑪ and tally lamp ㉛ (while shooting) start blinking. Replace the battery.
See "Warning" on page 23.

㉜ **[S-VHS] S-VHS indicator**
Appears when recording or playback in the S-VHS mode is engaged.

㉝ **[VITC] VITC indicator**
Appears in VITC recording. (With the optional time code generator SA-R200)
See "TIME CODE GENERATOR SA-R200 (Optional)" in pages 44 to 47.

㉞ **[LTC] LTC indicator**
Appears in LTC recording. (With the optional time code generator SA-R200)
See "TIME CODE GENERATOR SA-R200 (Optional)" in pages 44 to 47.

INPUT AND OUTPUT VIDEO AUDIO POWER



⑰ [DC INPUT] DC input terminal
Apply 12 V DC from an AC power adapter.

Pin No.	Function
1	GND
2	—
3	—
4	+12 V DC

⑱ [EARPHONE] Earphone jack (mono)
Insert an earphone with ø 3.5 mm plug to monitor the sound. Sound output from the monitor speaker is defeated.

⑲ [AUDIO INPUT 1/L, 2/R] Audio input connectors
Audio input connectors for channel-1 (L) and channel-2 (R). Input level can be selected from –60 dBs and +4 dBs with audio input select switch.

Pin No.	Function
1	GND (Shielded)
2	HOT
3	COLD

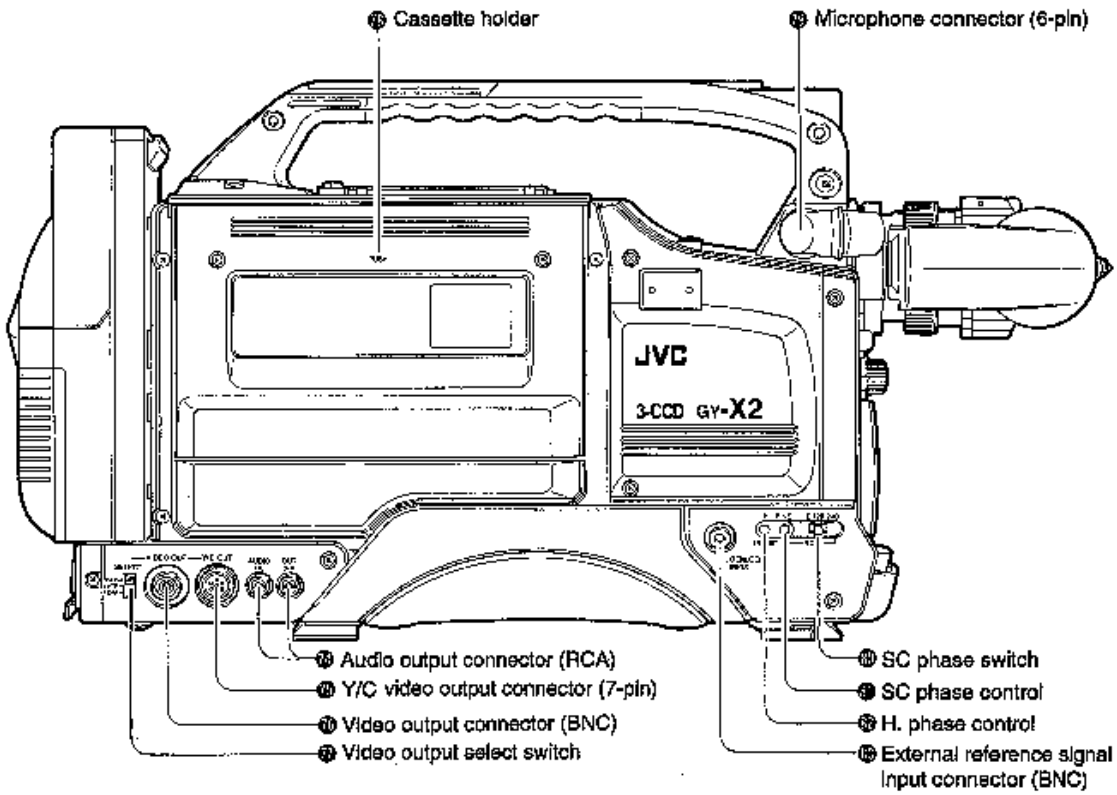
⑳ [AUDIO OUT 1/L, 2/R] Audio output connectors (RCA)
Outputs Hi-Fi or normal audio channel-1 (L) and channel-2 (R) as selected with the audio output select switch ㉑ .

㉒ [Y/C OUT] Y/C video output connector (7-pin)
Outputs the Y/C video signal selected with the video output select switch ㉓ .

Pin No.	Function	Pin No.	Function
1	Y signal	5	C signal
2	GND (Y)	6	GND (C)
3	—	7	—
4	—		

㉔ [VIDEO OUT] Video output connector (BNC)
Outputs the composite video signal selected with the video output select switch (㉓).

㉓ [SELECT] Video output select switch
Selects the video signal to be output from the Y/C ㉒ and composite ㉔ video signal output connectors.
CAM : Camera-through signal is output regardless of the VTR's operation mode.
VTR : When the VTR is in the Play mode, the playback signal is output. In other modes, camera-through signal is output.
OFF : Video signal output from either connector is not available. To save power, set to this position when signal is not necessary.


⑫ Cassette holder
⑱ Microphone connector (6-pin)
JVC
3-CCD GY-X2
⑭ Audio output connector (RCA)
⑮ Y/C video output connector (7-pin)
⑯ Video output connector (BNC)
⑰ Video output select switch
⑪ SC phase switch
⑩ SC phase control
⑨ H. phase control
⑧ External reference signal input connector (BNC)

⑫ Cassette holder
Accepts either an S-VHS or VHS cassette.

⑱ [MIC] Microphone connector (6-pin)
Connect the provided microphone.
With the KA-A30 microphone holder (optional), the following microphone models can be used.

- M-K50 (mono; VC-P740 optional cable required)
- MV-P602 (stereo; VC-P740 optional cable required)
- MV-P612 (stereo)

Pin No.	Function
A	R (Hot)
B	+9 V DC
C	GND
D	L (Hot)
E	L (Cold)
F	GND

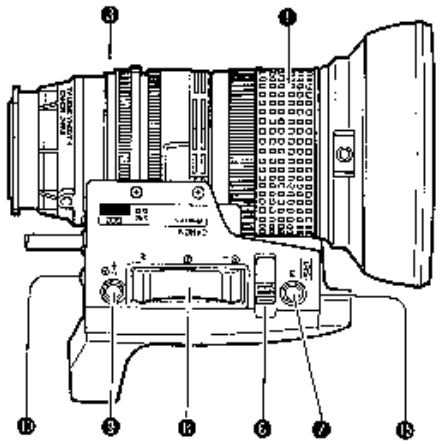
⑪ [SC 0° 120° 240°] SC phase switch
Adjusts the color subcarrier phase of this unit in three steps (0°, 120°, and 240°) with respect to the reference sync signal input to connector ⑧ in genlock operation.

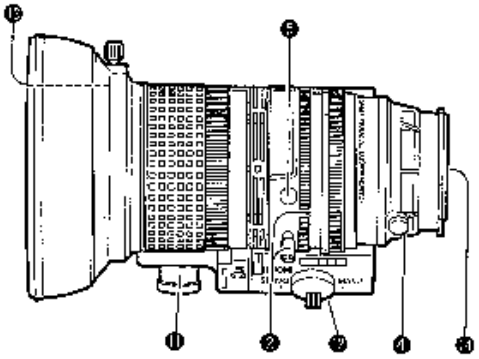
⑩ [SC FINE] SC phase control
Fine-adjusts the color subcarrier phase of this unit with respect to the reference sync signal input to connector ⑧ in genlock operation.

⑨ [H PHASE] H. phase control
Adjusts the horizontal sync phase of this unit with respect to the reference sync signal input to connector ⑧ in genlock operation.

⑧ [GENLOCK INPUT] External reference signal input connector (BNC)
Apply a composite video signal or black burst for genlock operation.

LENS YH13X7.5K12 (optional)





❶ FOCUS ring
Manual focus ring. Focus distance indicated.

❷ ZOOM lever/ring
Manual zoom ring with lever.
Deactivate servo zoom with switch ⓱.
Lens zoom length is indicated.

❸ IRIS ring
Manual iris ring.
Deactivate auto iris with switch ❽.

❹ BACK FOCUS ring
For set-up back focus adjustment only.
Secure with the screw knob.

❺ MACRO button (for closeups)
Turning the zoom ring counterclockwise (as seen from the front of the lens) while keeping this button (M) pressed, allows closeup shooting at up to 5 cm from the lens. The Normal Focus ring should be left set at infinity. In the Macro mode, focusing must be manually adjusted by the zoom ring; regular focus adjustment and zooming are not possible.

❻ IRIS MODE switch
A : Auto iris On and Remote operation
M : Manual iris operation

❼ MOMENTARY AUTO IRIS
In manual iris mode (M), pushing this button activates the auto iris function while it is held down only.

❽ ZOOM SERVO control
Pushing this lever in the W direction makes the lens move wider.
Pushing this lever in the T direction makes the lens move tighter.
Pushing harder changes the speed of the zoom. Turn this lever on with switch ❻.

❾ RETURN (RET) switch
- Pressing this button in the Record-Pause mode activates Auto Review. The tape rewinds for a few seconds, then automatically plays back the rewound portion and re-enters the Record-Pause mode at the same point. Useful for checking the tape section just recorded.
  This function work only one time after become "REC-Pause" mode to keep tape position accuracy.
- This switch has no effect during record mode.

❿ VTR trigger
To start shooting push once.
To stop shooting push again.

⓫ REMOTE ZOOM control connector
For use with Studio or Teleconferencing remote control units.

⓬ ZOOM MODE knob
SERVO : Servo zoom on
MANU : Manual zoom mode

⓭ FILTER mount screw
Mount a transparent or UV filter for lens protection by screwing this screw into the lens hood's inner groove, or the front of the lens.
Special-effect filters can also be used.
Filter diameter:
- Lens hood inside : 82 mm, 0.75 mm pitch
- Lens front : 72 mm, 0.75 mm pitch

⓮ Rear lens surface
Protect with special cover.

VIEWFINDER VF-115

❶ Slide lock
This stopper screw prevents the viewfinder from coming off the camera.

❷ Viewfinder shoe
Attaches to the viewfinder post on camera.

❸ Viewfinder cable
Connect to camera socket ⓫ .

❹ CONTRAST
Controls the level of viewfinder contrast.

❺ BRIGHT
Controls the level of viewfinder brightness.

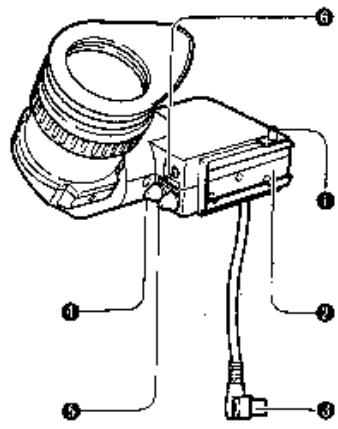
❻ TALLY switch
Set this switch to off if you do not want to inform the subjects by the Tally light that they are being recorded.

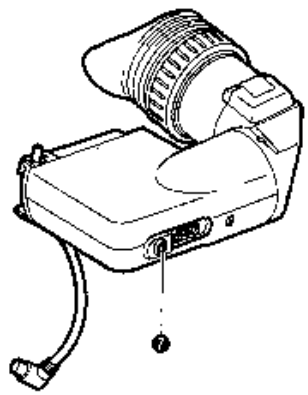
❼ Tally light
Lights when recording is in progress.

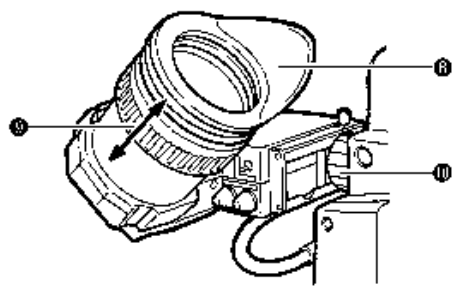
❽ Eyepiece
Blocks light from viewfinder screen and holds eye optics.
The eyepiece can be opened to view the screen directly.
The eyepiece can be rotated up and down for the best shooting position, or opened to view the screen directly.

❾ Eyepiece focusing ring
Loosen this ring and move the eyepiece backward and forward to focus the viewfinder for the operators vision.

❿ Viewfinder slide locking ring
This ring on the camera viewfinder post can be loosened to move the viewfinder to the left or right for the best operator comfort.
Warning: Avoid over-heating if a light is mounted on the camera handle accessory shoe !





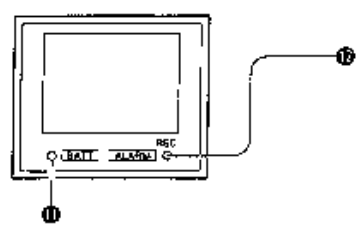


Viewfinder warning indications

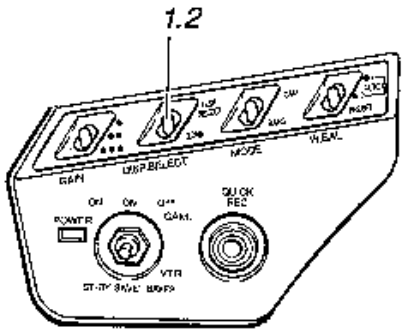
- **Viewfinder Warning Lights**

⓬ BATTERY light
This lights red when battery voltage becomes too low for the camera to operate.

⓭ REC/ALARM light
This light shines for these conditions.
Solid Green : • While recording
Blinks Green : • While the VTR prerolls before recording
• If the tape is finishing.
• If the VTR malfunctions.



VIEWFINDER STATUS DISPLAY



This function indicates camera and VTR status on the viewfinder screen. Three display modes are available: Mode-0, Mode-1 and Mode-2. Mode-0 is engaged when the power is turned on.

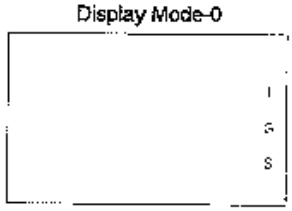
To select the mode:

1. Push the DISP. SELECT switch up. Each time the switch is pushed, the mode changes in the following sequence.

→ Mode-0 → Mode-1 → Mode-2 →

During tape playback the status display cannot be used.

Display Mode-0

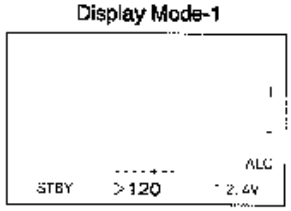


Mode-0 :

Indicates the selected functions listed below.

Indication	Selected function
I	IRIS switch set to OVER or UNDER
G or L	G : GAIN (+9, +18) L : LOLUX
S or ALC	S : SHUTTER switch set to ON or V-SCAN ALC: Auto level control

Display Mode-1



Mode-1 :

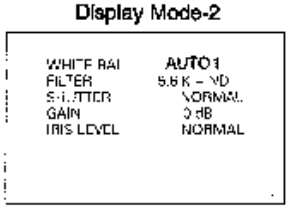
Push the DISP. SELECT switch once.

VTR mode : SAVE, ST-BY, REC, QREC, STOP
Remaining tape time : >120, >90, >60, >30, >20, >10, >5, >4, >3, >2, >1, >0
Input DC voltage : Power voltage with a decimal point
Audio level : 7 steps

(–18dB) (–12dB) (–6dB) (–3dB) (0dB) (+3dB) (+6dB)

Mode-0 indications are displayed in Mode-1.

Display Mode-2



Mode-2 :

Push the DISP. SELECT switch twice.

WHITE BAL : AUTO 1, AUTO 2, PRESET, FAW*
FILTER : 3.2K, 5.6K, 5.6K+ND
SHUTTER : NORMAL, 1/100 (U ver.), 1/120 (E ver.), 1/250, 1/500, 1/1000, 1/2000 EEI* (Variable scan speed) ; 60.2 – 1966.7(U ver.)/50.2 – 1953.1(E ver.)
GAIN : 0 dB, 9 dB, 18 dB, LOLUX, ALC*
IRIS LEVEL : OVER, NORMAL, UNDER

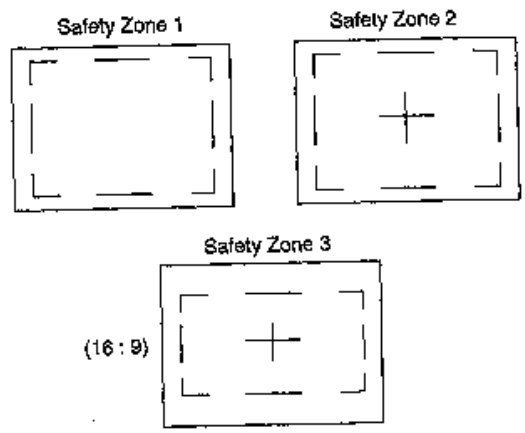
* In Quick Record mode
FAW = Full time auto white balance
EEI = Variable shutter
ALC = Automatic level control

VIEWFINDER AUTOMATIC DISPLAY

Safety zone indication:

2. Push the DISP. SELECT switch down to "ZONE". Each time the button is pushed down, the mode changes in the following sequence.

→ No indication → ZONE 1 → ZONE 2 → ZONE 3 →

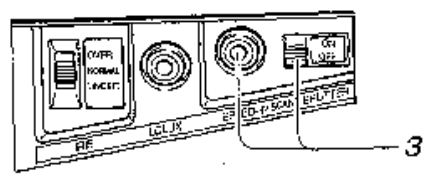


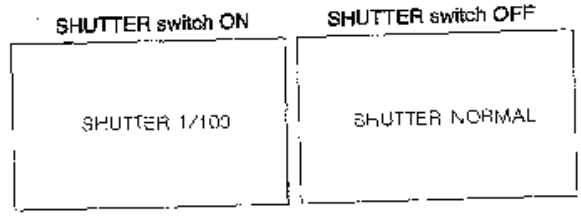
Shutter speed indication:

3. With the shutter switch set to ON, press the speed button.

→ 1/100 (U ver.) → 1/250 → 1/500 → 1/1000 → 1/2000
1/120 (E ver.)

- When the shutter switch is set to OFF, the display will be: SHUTTER NORMAL.
- Variable scan shutter speeds are also displayed.





Auto white/auto black operation mode indication:

4. Set the Auto set-up start switch to WHT. The following indication will appear for about 2 seconds.

With AUTO WHITE 1 :

AUTO WHITE 1 OPERATION → AUTO WHITE 1 COMPLETED

With AUTO WHITE 2 :

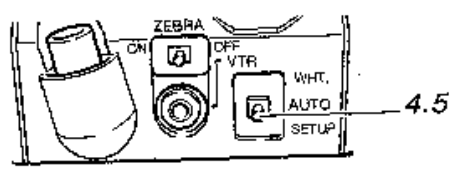
AUTO WHITE 2 OPERATION → AUTO WHITE 2 COMPLETED

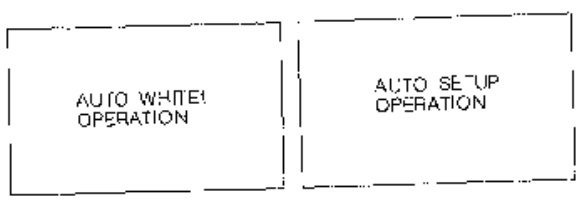
5. Set the Auto set-up start switch to SETUP. The following indication will appear for about 2 seconds.

AUTO SETUP
OPERATION

After this, the black balance and white balance mode will be displayed

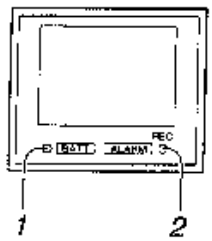
AUTO SETUP
COMPLETED





In Quick Record mode and Preset White Balance mode, black balance only is performed.

VIEWFINDER WARNING MESSAGES



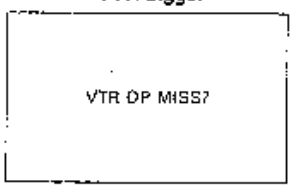
■ VIEWFINDER WARNING LIGHTS

1. BATTERY light
This lights red when battery voltage becomes too low for the camera to operate.

2. REC/ALARM light
This light shines for these conditions.
Solid Green: • While recording
Blinks Green: • While the VTR prerolls before recording
• If the tape is finishing.
• If the VTR malfunctions.

Automatic warnings:
LOW BATTERY : This blinks when the VTR or Camera battery level falls too low.
TAPE NEAR END: There are less than 3 minutes tape remaining.
TAPE END : The tape has run out.

VTR trigger



■ FUNCTION FAILURES

VTR WARNING : The VTR is not operating due to Condensation on the video heads, Servo failure, or other malfunctions.
VTR OP MISS? : VTR operation missed.

• The Camera/VTR switch may be in SAVE 1. The Save function stops head rotation and turns off the power to the circuitry.

White balance/Black balance

White balance/Black balance function

AUTO WHITE 1, 2
OBJECT ERROR : Check whether the object being shot is white enough.
Check for proper filter.

AUTO WHITE 1, 2
LOW LIGHT ERROR : Check to see if increasing gain or lighting will help.

AUTO WHITE 1, 2
OVER LIGHT ERROR: Check to see if the sun or other bright light is shining in the lens.
Check that the filter is adjusted properly.

AUTO BLACK
ERROR : Auto black has been interrupted.

AUTO BLACK
LENS NOT CLOSED?: Check that Auto Iris is on, or that the lens is not connected.

ERROR : Circuit trouble exists.
Check with JVC service center.

VTR WARNING FUNCTIONS

The VTR section of this camcorder features a comprehensive warning system which warns the operator of various malfunctions, if any, during shooting/recording by means of viewfinder and display panel messages, visual indications via LED or tally lamp, and alarm sounds via the earphone or monitor speaker.
The following chart summarizes the operation of the warning system.

■ SYMPTOMS

VTR Display Panel Warning	Symptom	Operation
SERVO LOCK	Head, drum and capstan are not locked while recording. No video signal input. (Appears when recording only.)	Operation continues.
AUTO OFF	Abnormal rotation of the drum, capstan, reel. Abnormal mechanical position.	Operation will stop after about 10 seconds.
DEW	Moisture condensation occurs.	Stops. No operations except cassette ejection are possible.
TAPE END	About 3 minutes before tape end. (Appears when recording only.)	Operation continues.
	Tape ends completely.	Stops.
BATT	Battery duration warning.	Operation continues.
	Battery capacity insufficient.	Enters the Record-Pause mode, then turned off.

■ WARNING INDICATIONS

Warning	VTR			Monitor Sound	Viewfinder		
	OPERATE LED	REC Tally	VTR Display Panel		Warning Lights: REC Tally	Warning Lights: BATT Tally	On Screen Display
SERVO LOCK	✣	✣	"SERVO LOCK"	▬▮▬	◑	—	VTR WARNING (SERVO)
AUTO OFF	✣	—	"AUTO OFF"	▮▮▮	◑	—	VTR WARNING (HARD)
DEW	●	—	"DEW"	▬▮▬	◑	—	VTR WARNING (DEW)
TAPE END	◑	◑	—	▬▮▬	◑	—	TAPE NEAR END
	●	✣	—	▮▮▮ (REC, STOP)	◑	—	TAPE END
BATT	◑	◑ (REC)	Note E BATT F	Note ▬▮▬ (REC, STOP)	—	Note ◑	Note LOW BATTERY
	●	✣	Note E BATT F	Note ▮▮▮	—	—	OPERATE OFF after recording pause.

● Note: When it is "SAVE1" mode, only these function works.

- The OPERATE LED usually remains lit green to show operation on. In case of warning, it changes to red. Operation is as above.
- The alarm sound is output together with regular monitor sound via monitor speaker or earphone.
- Indication symbols:

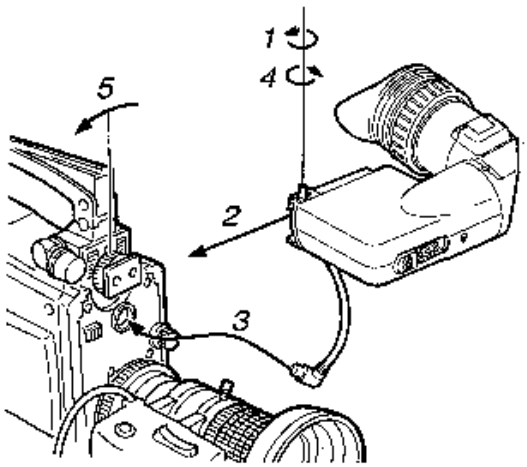
● : Lights ◑ : Blinks once per second ✣ : Blinks 4 times per second

▮▮▮ : Continuous sound ▬▮▬ : Long beeps once per second –▮▮▮– : Short beeps 4 times per second

PREPARATIONS

Service Information:
The VF-P550 viewfinder cannot be attached to the GY-X2 for the reason of the power capacity.
When you want to use a 5" viewfinder for the GY-X2, make sure to attach it the VF-P550B viewfinder.

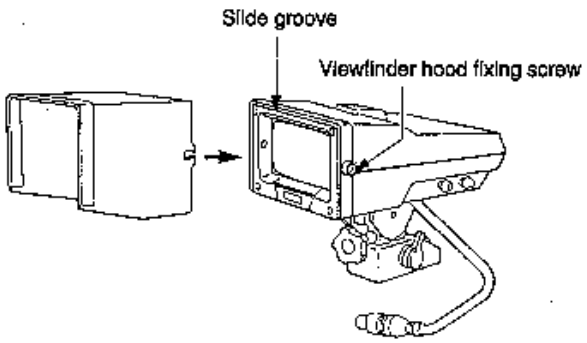
ATTACHING THE VF-P115 VIEWFINDER

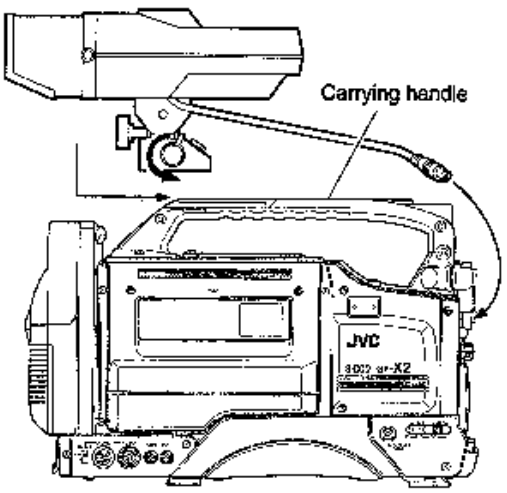


1. Loosen the stopper screw.
2. Attach the viewfinder with its guide aligned with the shoe.
3. Connect the cable.
4. Tighten the stopper screw.
5. Tighten the ring.

ATTACHING THE STUDIO VIEWFINDER VF-P400/VF-P550B (optional)

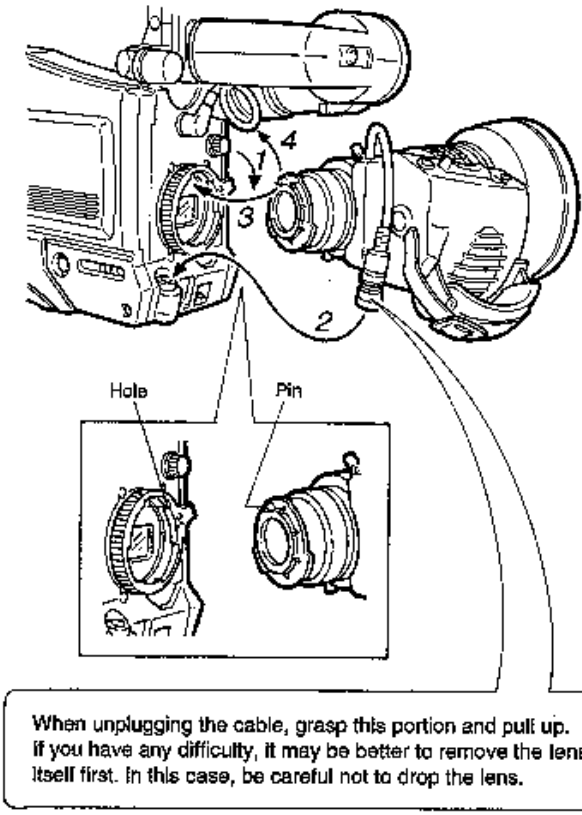
Attach the viewfinder to the slide bracket of the carrying handle.
For details, refer to the VF-P400's instructions.





ATTACHING THE YH13X7.5K12 ZOOM LENS (optional)

1. Loosen the mount ring.
2. Connect the cable.
3. Attach the lens with its pin aligned with the hole in the mount.
4. Tighten the mount ring.

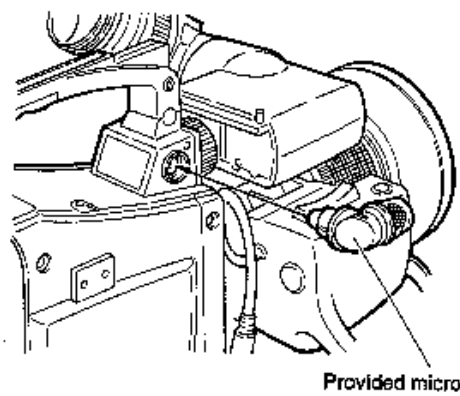


When unplugging the cable, grasp this portion and pull up. If you have any difficulty, it may be better to remove the lens itself first. In this case, be careful not to drop the lens.

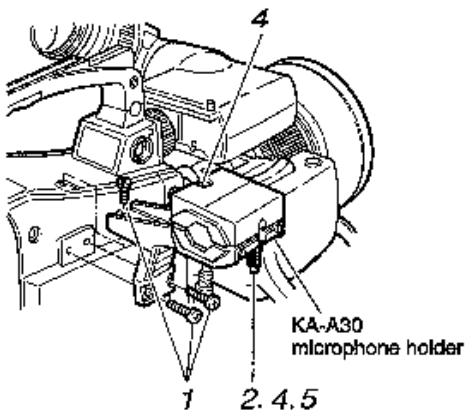
MICROPHONE ATTACHMENT

Connecting the provided microphone

Connect the provided microphone to the microphone connector (6-pin).

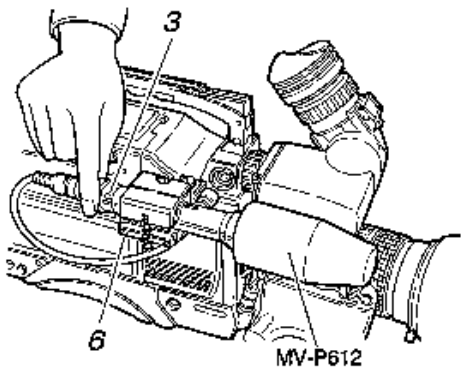


ATTACHING THE MV-P612/MV-P602/M-K50 OPTIONAL MICROPHONE

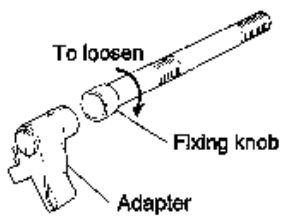


With the optional KA-A30 microphone holder, the optional MV-P612 (stereo), MV-P602 (stereo) and M-K50 (mono) microphones can be used.

1. Secure the microphone holder with 3 screws.
2. Turn the external fixing knob to loosen the quick release hook. Pull the knob to open the holder.
3. Attach the microphone to the microphone holder so that the microphone does not interfere with the cassette holder. With a stereo microphone, make sure that the left/right-sides are correct.
4. Turn both the external and internal fixing knobs to secure the microphone.
5. Close the holder.
6. Secure the microphone cable with the KA-A30's cable clamp.



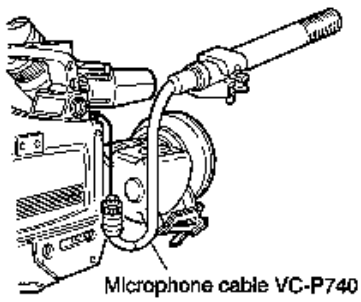
- **JVC MV-P612 microphone (optional)**
  To connect the JVC MV-P612, use the 6-pin connector.



M-K50/MV-P602

- **JVC M-K50/MV-P602 microphones (optional)**
  To connect these models, first remove the microphone from the adapter and connect the optional VC-P740 microphone cable instead. Use the 6-pin connector.

- **Other microphones**
  When using microphone models other than the above, connect to the XLR 3-pin audio input connector located below the battery holder.



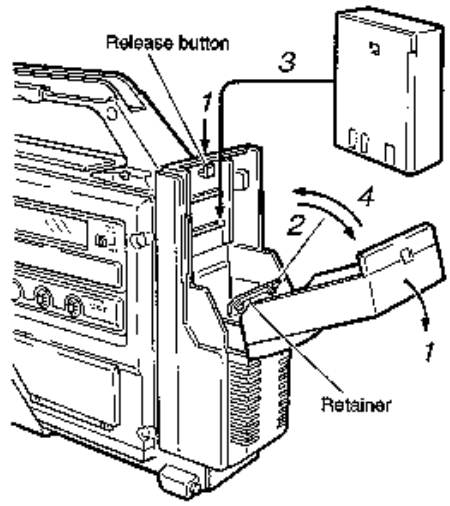
→ Service Information:
Battery capacity
NB-G1 (JVC) : 2.2 Ah, 12 V
NP-1B (Sony) : 2.3 Ah, 12 V
NP-1A (Sony) : 1.7 Ah, 12 V

POWER SUPPLY

NB-G1 (JVC) or Flat shape type BATTERY PACK

To install the battery pack

1. Open the cover while pressing the buttons.
2. Swing out the battery retainer.
   (For Flat shape type, leave the retainer in place.)
3. Install the battery pack with its terminals facing the camera.
   (The illustration shows an NB-G1 battery pack.)
4. Replace the battery retainer and close the cover.



Operating time

A fully charged battery pack offers the following continuous operating time at 25°C:

NB-G1 : Approx. 40 minutes

The operating time may be shorter than this depending on the battery storage condition and ambient temperature.

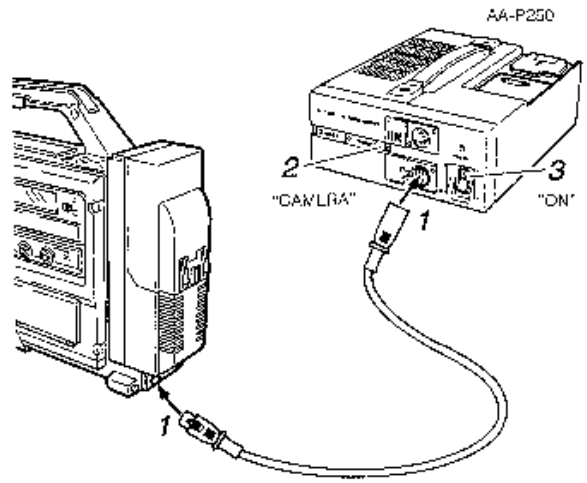
- Before recording, charge the battery pack. It is recommended that several charged battery packs are kept at hand as spares.
- To charge the battery pack, use an optional AC power adapter. For the charging procedure refer to the instruction manual of the optional AC power adapter.
- The battery condition can be checked on the viewfinder screen. (See page 20.)
- When the battery pack is becoming low, a warning indicator appears. (See page 23.) When this indicator is seen, replace the battery pack with a charged one.
- Do not leave the battery pack in a place subject to high temperatures, as this could damage it and make it unusable.

Note

If power is supplied from both DC input (4 pin XLR) and battery holder simultaneously, the power source from DC input has priority. If the connector on the DC input side is disconnected or connected, the power may be turned off. Turn the power switch on again.
In this condition, if low battery warning is indicated, be sure to disconnect the power of DC input to switch power source of battery holder. Otherwise, automatic power source alternation may not work properly.

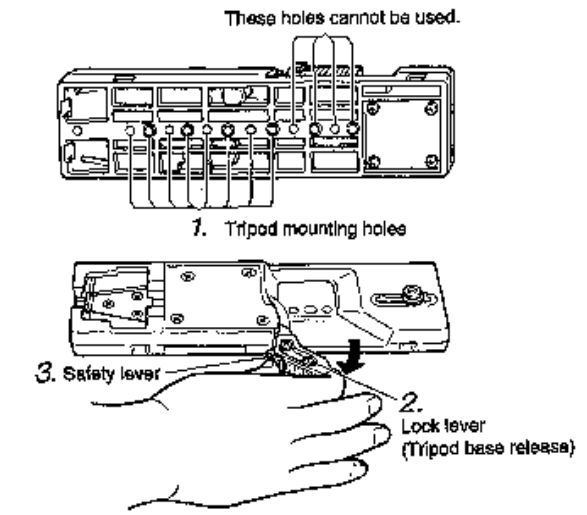
AA-P250 AC POWER ADAPTER

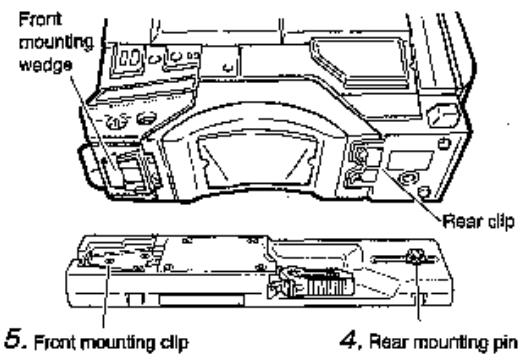
1. Connect the camera head to the AC power adapter using the cable provided with the AC power adapter.
2. Set the switch to CAMERA.
3. Set the POWER switch of the AC power adapter to ON.

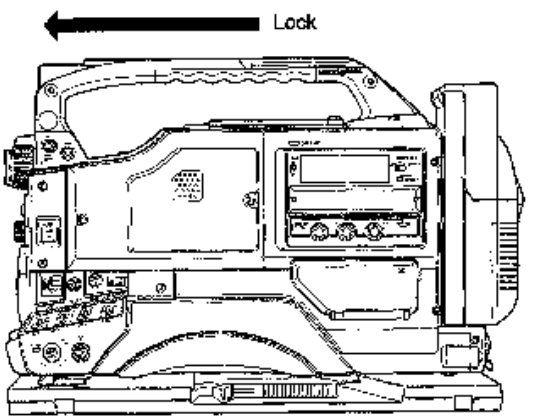


Do not use power units other than specified, otherwise the recorder may stop due to a temporary drop in power because of the operation of the protective circuit.

TRIPOD MOUNTING







The KA-510 Tripod Base included with the camera must be used to secure the camera to a tripod or camera stand.

1. Tripod mounting holes
Match a 3/8 or 1/4 inch tripod mounting screw to the best hole for good balance.

2. Tripod mount release
Pull back once to activate the front clip before mounting the camera.

3. Safety lever
Prevents accidental release. If the camera is secured in the Base, this release lever must be pushed in order to pull the release lever and open the Base.

4. Rear mounting pin
Make sure the rear mounting clip of the camera is firmly on the Tripod Base, so that the rear mounting pin can be engaged properly.

5. Front mounting clip
Making sure the rear mounting pin engages, slide the front mounting wedge on the camera into the front mounting clip of the base until it engages automatically with a clik.
The front clip will hold the camera safely, but without engaging the rear clip, the camera will tend to move slightly in the Base.

6. Mounting error
Double check that the rear pin is engaged properly.
The front clip will hold the camera safely, but without engaging the rear clip, the camera will tend to move slightly in the Base.

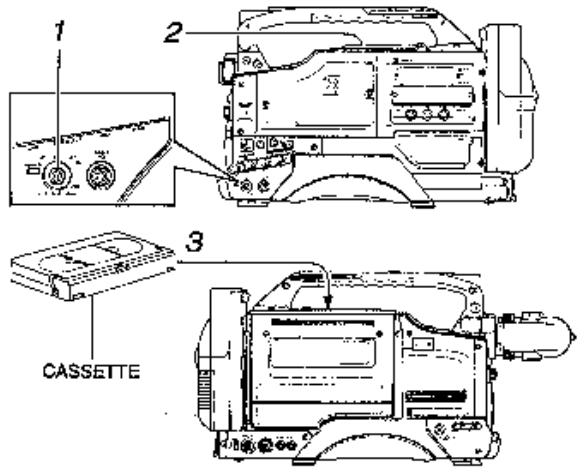
LOADING, EJECTING

1. Set the POWER switch to "ST-BY".
2. Press the EJECT button to open the cassette holder. The eject indicator blinks.
3. Insert a cassette. Make certain before loading the cassette that the tape is not slack. Close the cassette holder slowly. When ejecting a cassette, first engage the Stop or Record-Pause mode, then press the EJECT button. It takes approximately 10 seconds to eject in the Record-Pause mode because the process starts from the fully-loaded tape position.

Ejection is not possible when the power is off.

Note: Do not use S-VHS or VHS cassettes longer than 160 minutes to avoid tape damage.

Note
Because tape may be damaged while search mode, do not use C-Cassette adaptor.



ADJUSTMENTS BEFORE SHOOTING

CAMERA CONTROL SETTINGS FOR ADJUSTMENT

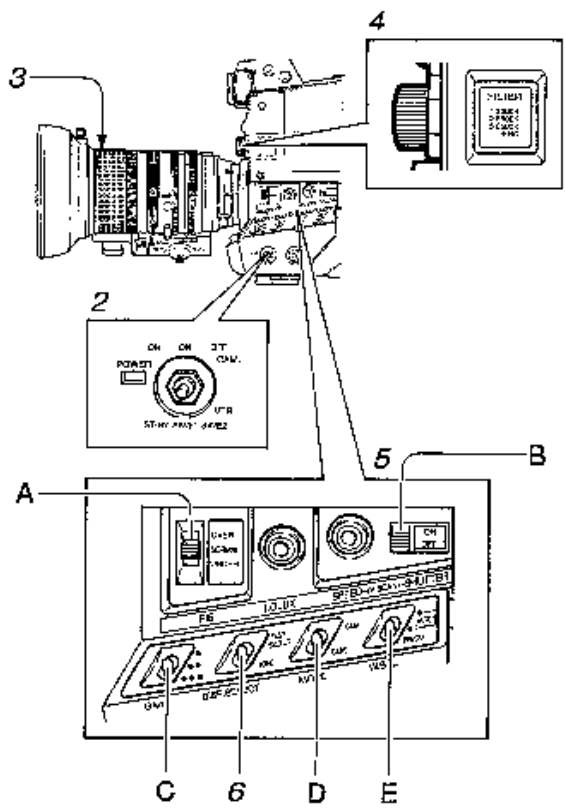
1. POWER ON
1. First place a charged battery in the battery holder or connect DC power to the DC input.
2. Turn the AC power adapter on.

2. SAVE/ON
Turn the POWER switch to the SAVE 1/ON middle position.

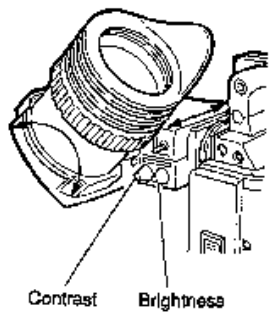
3. AUTO IRIS ON
Initially set the lens Iris to Automatic.
Later take advantage of the Momentary Iris control to activate the camra's exposure system when needed.

4. FILTER turret
Choose the proper Filter Selection for the lighting conditions.

5. Left side SWITCH positions
A. IRIS compensation switch; set to NORMAL.
B. SHUTTER switch; set to OFF position (1/60, U ver./1/50, E ver.)
C. GAIN switch; set to 0 dB. The single dot position is always 0 dB.
D. MODE (CAM/BARS) switch; set to CAM.
E. W. BAL (Auto White Balance Memory) switch; set to 1 or 2.

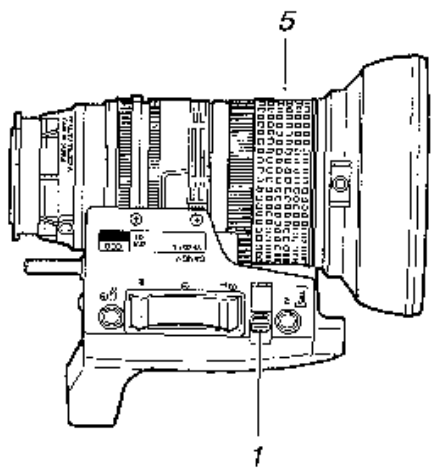


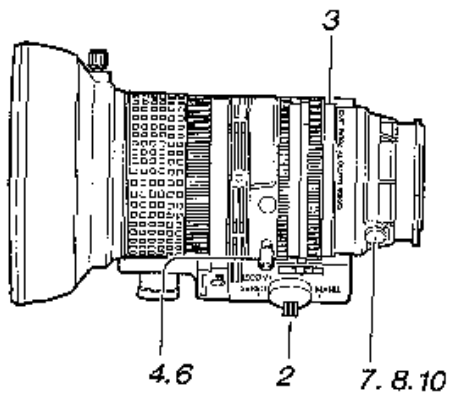
VIEWFINDER ADJUSTMENT



Adjust the viewfinder to the operator's eyesight and shoulder position for the best comfort.
Next adjust the brightness and contrast for the viewing conditions.

BACK FOCUS ADJUSTMENT





It is only necessary to perform this when focusing is not correct in both the Telephoto and Wide-angle positions, such as when the lens is attached for the first time.
Adjust the viewfinder for sharpness first.
It is easier to adjust back focus when the subject is more than 3 meters from the subject.

1. Set the Iris mode to M (Manual).
2. Set the Zoom mode to MANU (Manual).
3. Open the Iris ring to F1.4. If the illumination is too strong, reduce it or move to a darker place.
4. Turn the zoom lever until the lens is completely telephoto.
5. Focus on the subject. There is a specific chart that looks like a dart board which is helpful.
6. Set the lens to completely Wide-angle.
7. Loosen the back focus ring retaining knob.
8. Adjust the back focus ring for the best possible focus.
9. Repeat steps 4 through 8 for fine adjustment.
10. Tighten the back focus ring retaining knob to secure the ring.

NORMAL AUTO WHITE/BLACK BALANCE ADJUSTMENT

Adjust White Balance:
- When the type of light source changes before or during shooting.

Adjust Black Balance:
- When the unit is used for the first time each day.
- After a long period of storage.
- When ambient temperature has changed dramatically.
  The last Black and White balance settings are kept in memory even if the camera is turned off.

1. Set the Iris to Automatic (AUTO) or Manual, depending on the subject.
(The Iris will be closed automatically during Black Balance.)

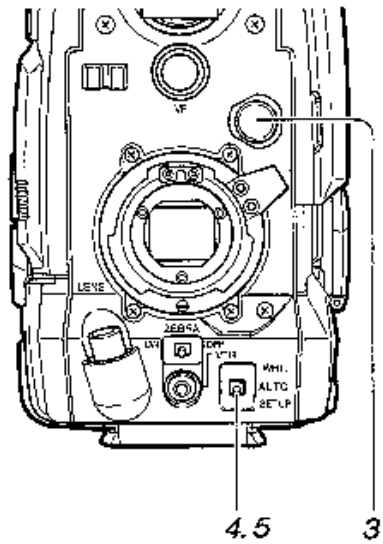
2. Fill the screen with a white object placed in the same position as the subject, and lit by the same primary lighting as the subject.
Set the W. BAL switch to either 1 or 2.

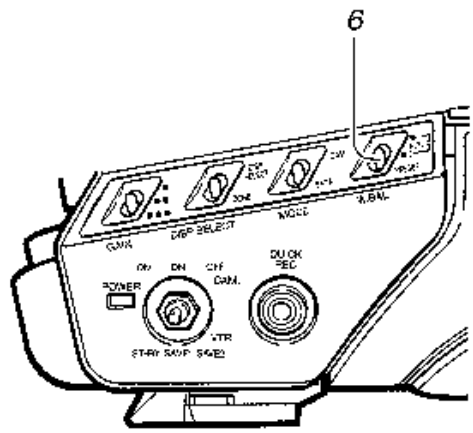
3. If the FILTER turret has not been set for the current lighting color temperature, do so now. See page 7.

4. For AUTO SETUP (both Black and White Balance) press the Auto switch in the down position momentarily.
If White Balance is in Preset or Quick Recording is selected, Black Balance only will be performed.
Black Balance operation will be repeated after White Balance has been performed.

For White Balance only, push the switch in the up position momentarily.

5. During the process Auto Set Up, Black Balance or White Balance "Operation" and "Completed" will show in the viewfinder.



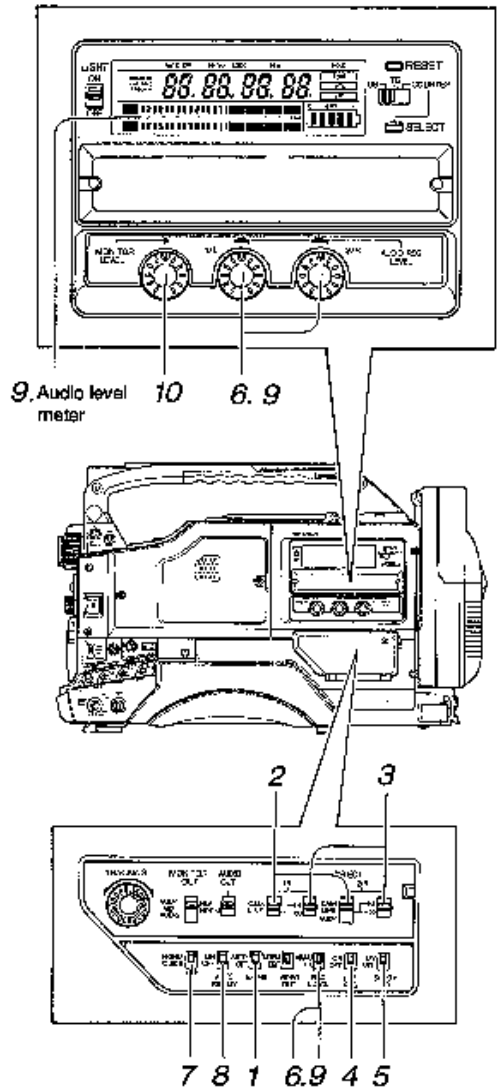


Function Failures:
WHITE BALANCE/BLACK BALANCE function

AUTO WHITE 1, 2 OBJECT ERROR	:	Check whether the object being shot is white enough. Check the filter.
AUTO WHITE 1, 2 LOW LIGHT ERROR	:	Check to see if increasing gain or lighting will help.
AUTO WHITE 1, 2 OVER LIGHT ERROR	:	Check to see if the sun or other bright light is shining in the lens. Check that the filter is adjusted properly.
AUTO BLACK ERROR	:	Auto Black has been interrupted.
AUTO BLACK LENS NOT CLOSED ?	:	Check that Auto Iris is on, or that the lens is not connected.
ERROR	:	Circuit trouble exists. Check with JVC service center.

VTR CONTROL SETTINGS BEFORE SHOOTING

SETTING THE SWITCHES AND AUDIO LEVEL



1. S-VHS mode

Setting the S-VHS/VHS mode switch

1. Open the function box cover by pushing the unlock lever.
2. Set the S-VHS switch as required.
   S-VHS mode: Set switch to AUTO.
   VHS mode : Set switch to OFF.

- S-VHS recordings are not possible with VHS cassettes. The VHS mode will be automatically selected.
- VHS mode will record on S-VHS tapes in VHS mode.
- Playback mode is automatic — No switch change.
- S-VHS indicator light
  S-VHS ON : Steady light

2. Audio input

- Audio input channel-1 (L) select switch
  CAM : To record the L channel of the microphone input
  LINE : To record the audio channel-1 (L) (XLR 3-pin) input
- Audio input channel-2 (R) select switch
  CAM : To record the R channel of the microphone input
  LINE : To record the audio channel-2 (R) (XLR 3-pin) input
  AUD-1 : To record the audio channel-1 (L) input on channel-2 as well. Set to this position when an monaural microphone is used.

3. Audio level adjustment with audio line input

Set the audio channel-1 (L)/channel-2 (R) line input level select switch as follows.

+4 : For +4 dBs line input
–60 : For –60 dBs microphone input

4. Hi-Fi/Normal sound

Set the Hi-Fi REC select switch.

ON : To record on the Hi-Fi and normal audio tracks
OFF : To record on the normal audio tracks only

5. Dolby NR on/off

Set the Dolby NR on/off switch.

ON : For recording/playback with Dolby noise reduction
OFF : Dolby noise reduction off

6. Recording level

Set the recording level select switch.

MANU : Set to this position when adjusting the level manually with the recording level controls.
FIX : To record with standard gain. When the level of signal input is excessive, the limiter is activated to prevent distortion. In this position, the recording level controls are not operate.

7. Assemble recording

Set the AEF select switch.

NORM : AEF is activated for preroll assemble recording with noiseless scene transitions. It takes longer to restart recording from the Record-Pause mode.
QUICK: AEF preroll works partially for quick recording start from the Record-Pause mode. Scene transitions ar e blurred.

See "Automatic Editing Function" on page 38.

8. Auto Review function

Set the AUTO REVIEW switch.

ON : Reverse plays the tape from the Record-Pause mode and plays for approximately 3 seconds, then enters the Record-Pause mode again. For revfewing the last-recorded section.
OFF : This function is not available.

See "Auto Review Function" on page 38.

- Adjusting the audio recording level and monitor level

9. **Recording level**
With the audio recording level switch set to "MANU", adjust the recording level controls of both the Hi-Fi/normal audio channels 1 (L) and 2 (R) so that the peak level in the audio level meters shows about "0 dB".
When the recording level select switch is set to "FIX", these controls are inoperable.

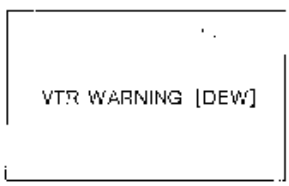
10. **Monitor speaker/earphone level**
Adjust the monitor level control to optimize the sound level. Alarm sound level is fixed and cannot be adjusted by this control.

SHOOTING OPERATION

NORMAL SHOOTING

1. First set the POWER switch to VTR SAVE 1, then to VTR ST-BY. The power is turned on and the POWER indicator lights red. The display panel comes on.

2. Make sure that the "DEW" (moisture condensation) warning indication is off. If it is on, wait until it goes off. When moisture condensation occurs, the warning indication appears on the viewfinder screen.



Viewfinder indication

3. Insert a video cassette.
See "Loading, Ejecting" on page 29.

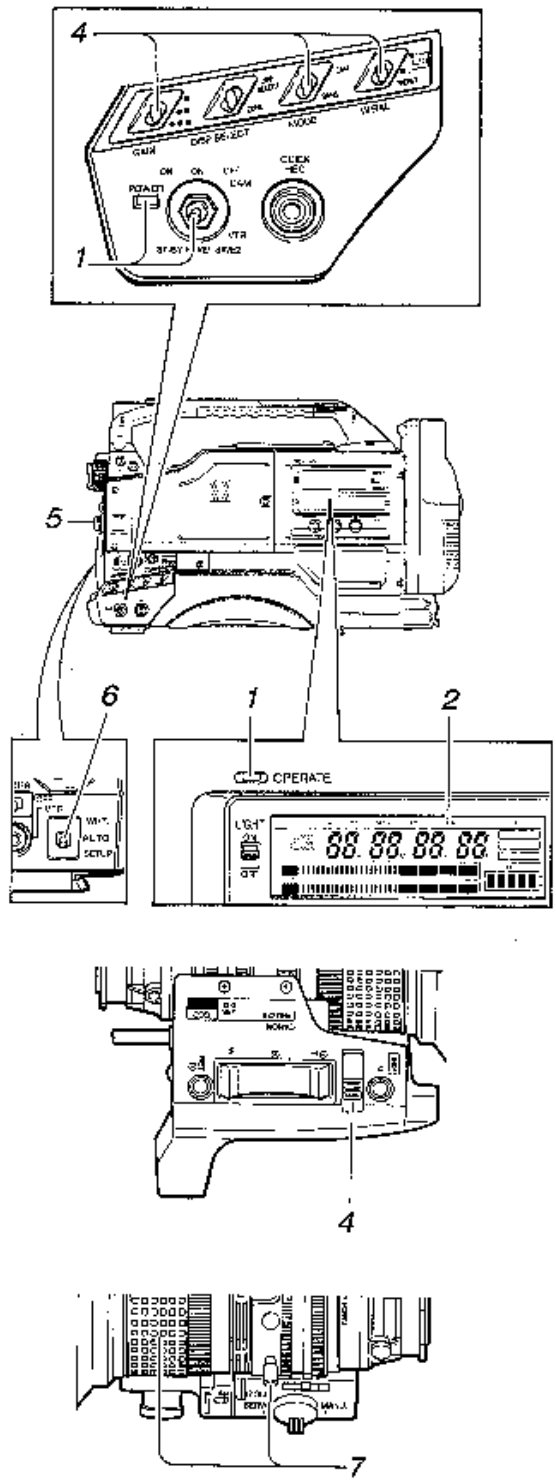
4. Set the switches as required.
"CAM"
"AUTO 1" or "AUTO 2"
Sensitivity suitable for the subject
Set the iris switch of lens to "A".

5. Select the filter according to the lighting condition.

Position 1 (3200K)	: For shooting indoors or outdoors when illumination is not sufficient
Position 2 (5600K)	: For shooting outdoors
Position 3 (5600K + ND)	: For shooting outdoors on a sunny day

6. Adjust the white balance and black balance. (See page 31.)

7. Point the camera at the subject and determine the angle of view and focus with the zoom lever and the focusing ring.



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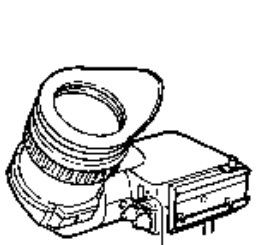

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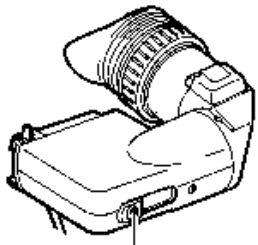

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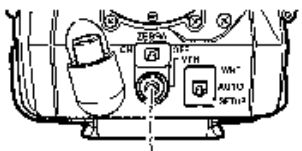

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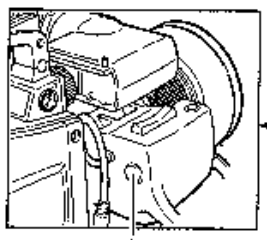

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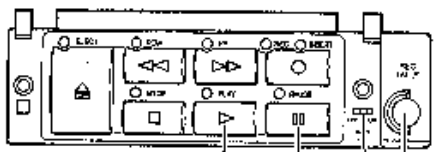

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• Service Information:
The trigger button on the standard lens for the GY-X2 is a non-lock type. For use of other lenses whose trigger buttons are alternate type (lock type), internal switch setting must be changed.
For detail, refer to "1.6.1 Switches on CP board - ② Lens trigger switching" in page 1-4 of the service manual.

8. Press the recording start/stop trigger on the camera or the PLAY button on the VTR section to start recording.
Once recording has started, the tally lamps on the VTR section and the viewfinder light red, and the REC indication in the viewfinder lights green.

9. To stop recording, press the recording start/stop trigger on the camera again, or the PAUSE button on the VTR section. The unit enters the Record-Pause mode after Quick Review.

Note

- If the STOP button is pressed to stop recording, it takes longer to restore the Record-Pause mode. In this case, set the POWER switch to VTR SAVE 1 once, then set to VTR ST-BY again.

10. When shooting is completely finished, unload the cassette and remove the battery pack or turn the power off.

Notes

- If you switch off the power within one second after the cassette holder is opened, it may not be closed fully. In this case, turn the power on and close the cassette holder. Then turn the power off.
- The cassette cannot be ejected if the power supply is insufficient (too low or no battery power). In such a case, replace the battery pack with a charged one.
- The REC/ALARM indicator (green) in the viewfinder blinks until recording actually starts. This is not due to any defect of the unit, but indicates that the VTR is preparing for recording.
- To protect the video heads if the Record-Pause mode is continued for more than about 30 minutes, drum rotation stops and the operation LED starts blinking green. To re-engage the Record-Pause mode from this status, press the REC button on the VTR section or set the POWER switch in the order of VTR ST-BY – VTR SAVE 1 – VTR ST-BY.
- If the VTR trigger button is pushed very quickly and repeatedly, the viewfinder record tally light may blink incorrectly. To clear this condition, turn the camera off, or push the stop button on the VTR.

Power Switch	AUTO SAVE Time	VTR Mode	AUTO EDIT Approximate Time		VTR Condition
			Normal	Quick	
ST-BY	—	STOP	8 sec	8 sec	Tape is unloaded.
	< 5 min	Rec-Pause	1.5 sec	0.6 sec	Tape in pause.
	> 5 min	Rec-Pause	2 sec	1 sec	Tape tension is loosened.
	> 10 min	Rec-Pause	3 sec	2 sec	Pinch roller/Capstan off
	> 30 min	Rec-Pause	5 sec	5 sec	Head drum stopped.
SAVE1	—	—	10 sec	10 sec	Power on, Head drum stopped, Capstan stopped, Tension off.
SAVE2	—	—	NO	NO	Power off, Head drum stopped, Capstan stopped, Tension off.

Service Information:
If it is wanted to inactivate ALC function in the QUICK REC mode, change of internal switch setting makes it possible.
For detail, refer to "1.6.1 Switches on CP board - ⑤ QREC ALC switch" in page 1-4 of the service manual.

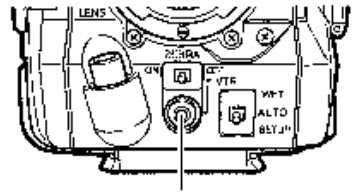
QUICK RECORDING

The quick-recording function ensures pictures of reasonable quality even when there is no time for camera adjustments and settings.

- Auto iris
- Video ALC
- Full-time auto white balance
- Camera output even when color bar is selected

Allow 10 seconds or more after the power has been switched on, otherwise the quick-recording function will not operate properly.

- Quick-recording is possible with the operation switch set to either ST-BY or SAVE 1.



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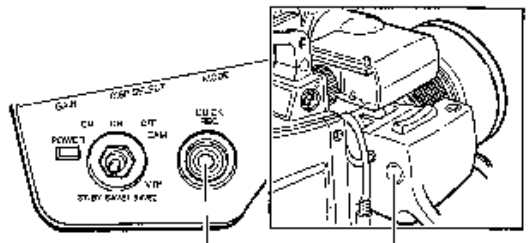


2, 3 3

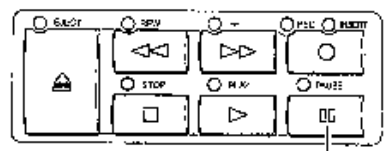
ITEMS TO BE CHECKED

- For the quick-recording function to work properly, check the following items:
  1. A charged battery must be installed.
  2. There is no condensation on the video heads.
  3. A cassette with its safety tab in place must be loaded.

PROCEDURE

1. Check points 1, 2 and 3 above.
2. Press the QUICK REC trigger.
3. For Record-Pause mode, press one of the following triggers:
   - QUICK REC trigger
   - VTR trigger on the camera
   - VTR trigger on the lens
   - "PAUSE" button on the VTR

   In Record-Pause mode, the camera resumes the status in which it was before quick recording was initiated.



3

Note

- If the STOP button on the VTR section has been pressed and "STOP" appears on the viewfinder screen, it takes longer to initiate quick-recording. Return the POWER switch to SAVE1 and set to ST-BY again.
- Do not press the Quick Record trigger quickly and repeatedly. (See note on previous page.)
- If VTR start to "REC" from stop mode, audio level may change at the beginning of recording.

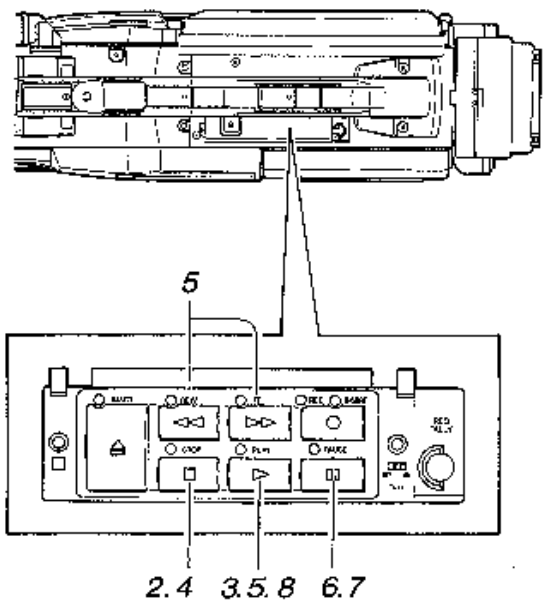
VIDEO AUTO LEVEL CONTROL (ALC) CIRCUIT

The Quick Record mode incorporates a Video Auto Level Control (ALC) circuit. This keeps the video level constant through the combined use of auto iris, electronic shutter, and sensitivity boosting.

- Under standard lighting conditions, the video level is kept constant by the auto iris.
- If the light increases and the iris is closed to its smallest aperture, the video level is kept constant by changing the shutter speed to lower light sensitivity.
- If the light decreases and sensitivity is insufficient even at maximum iris aperture, the electric gain circuit is activated to increase the sensitivity by 1 step. Since this is a stepping system (non-linear), the picture becomes brighter suddenly, resulting in unnatural scene continuity. To prevent this, the GY-X2 uses a system which activates both the gain-up and electronic shutter simultaneously, balancing the "plus" of the gain-up with the "minus" of the shutter to keep the video level constant.

  When the gain-up is functioning, ALC operation is performed by changing the shutter speed. If lighting should again become insufficient, the gain is boosted by 1 more step and the same operation is performed. The gain-up operation continues up to 18 dB.

PLAYBACK OPERATION



WARNING: TO AVOID ERASING MASTER MATERIAL, **PRESS STOP IMMEDIATELY** AFTER LOADING CASSETTE FOR PLAYBACK.

To play back the tape:

1. Load a recorded cassette and make sure that the unit is in the Record-Pause mode.
   The Pause and Record LED are light up to red.
2. Press the STOP button.
3. Press the PLAY button.
   Playback pictures will be seen on the viewfinder screen.
4. Press the STOP button to stop playback.

To search at high speed:

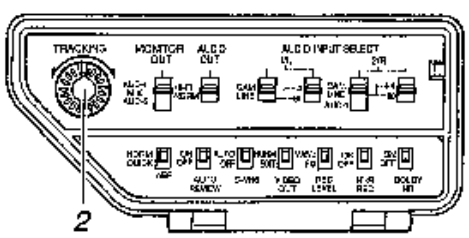
5. Press the REW or FF button while in the Play mode; reverse or forward search will start. To restore normal playback, press the PLAY button.
   The search speed is 5 times normal in both directions.

- During search, there may be noise or loss of color in the picture or the picture may become monochrome. This is normal and not a defect of the unit.
- Hi-Fi audio is not output during search.

To play stills or advance frames:

6. Press the PAUSE button for still picture playback.
7. Press again for frame advance. Keeping it pressed advances frames continuously.
8. Press the PLAY button to restore normal playback.

- To protect the tape and video heads if still playback continues for a long time, the tape is advanced by a few frames after about 3 minuts 30 seconds and again after about 7 minutes. After about 10 minutes 30 seconds the head drum stops rotating.
- Noise or vertical vibration in the picture may appear. This is normal.



TRACKING CONTROL

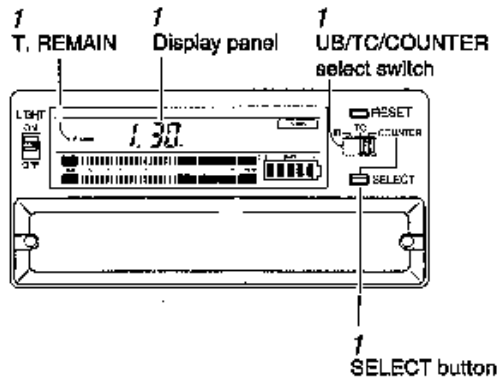
To perform tracking adjustment when the playback picture is too grainy or contains noise.

1. Play back the tape.
2. Turn the TRACKING control slowly to reduce noise while checking the playback picture. Normally, set the control to its center position.

REMAINING TAPE TIME DISPLAY

1. The remaining tape time is displayed on the display panel. Set the UB/TC/COUNTER select switch to "COUNTER". "T. REMAIN" appears and the remaining time is displayed. Press the SELECT button to restore to the tape counter display. The remaining tape time is displayed in 1-minute increments.

- Just after recording is initiated, the display shows "– H – – M". The remaining time will be displayed after a few seconds.
- The remaining tape time is approximate estimate time. Actual remaining time may be different.



RETAKE FUNCTION BY EDIT SEARCH

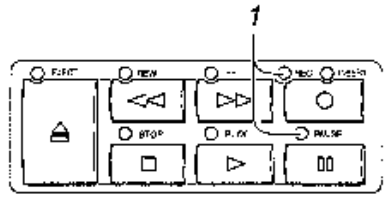
The retake function allows checking of the record picture without leaving the Record-Pause mode. Determine the point at which you want to strart the next take while checking the search picture at normal speed in either direction.

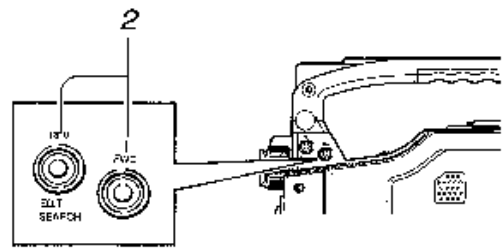
1. Make sure that the unit is in the Record-Pause mode, and Pause and Record LED are light up to red.

2. To search in the reverse direction, keep the REV button depressed. To search in the forward direction, keep the FWD button depressed. When the button is released, the Record-Pause mode will be engaged.

Notes for VTR operation

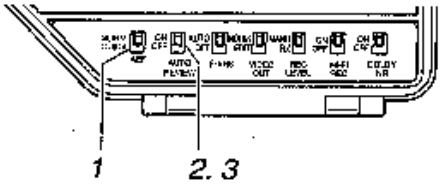
- When recording in the VHS mode on a tape previously recorded in the S-VHS mode, it is not possible to search or edit S-VHS recordings.

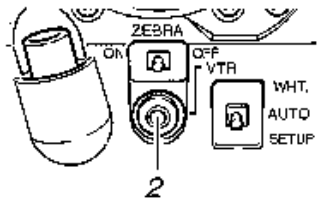




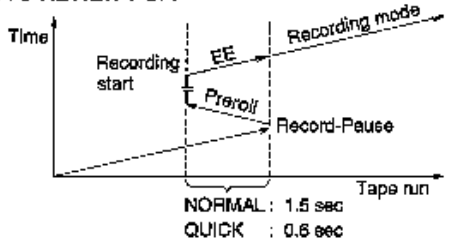
ADVANCED FUNCTIONS – VTR

AEF (AUTOMATIC EDITING FUNCTION)

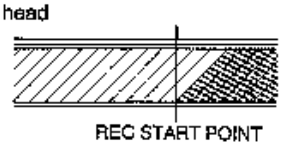




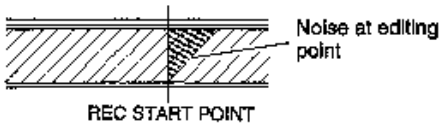
AEF : NORM
AUTO REVIEW : OFF



■ Flying erase head



■ Fixed head



NORMAL

1. Set the AEF select switch to NORM to activate the Automatic Editing Function (AEF).
2. With the AEF activated, pressing the recording start/stop trigger prerolls the tape for about 1.5 seconds (with AUTO REVIEW switch set to OFF) and the unit enters the Record-Pause mode. When the Record-Pause mode is disengaged and recording is started, no recording takes place in the initial 1.5 seconds in order to allow tape running to stabilize for assemble shooting with clean scene tansitions. (Called "backspace editing".)

QUICK RECORD

- This unit incorporates a rotary erase head and frame servo circuitry to provide clean assemble shooting without rainbow noise (color beats). However, with the AEF select switch to "QUICK", the tape is prerolled for only 0.6 seconds to permit quick recording start. Scene transitions will be blurred in this mode.

Note

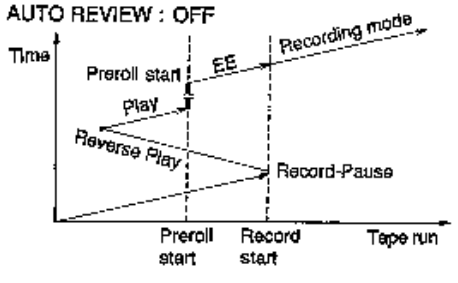
- Some frames may be dropped if the unit is moved or subjected to excessive vibration while in the Record-Lock or Record-Pause mode.

FLYING ERASE HEAD

The rotary erase head erases the video tracks consecutively. When recording video signals, the rotary erase head erases each track just before the video head records on the track. This prevents the rainbow noise that appears with fixed erase head.

AUTO REVIEW

AEF : NORM
AUTO REVIEW : OFF



3. Set the AUTO REVIEW switch to ON to activate the Auto Review function. This function rewinds the tape when the Record-Pause mode is engaged and plays back a brief portion of the last-recorded segment to confirm that the recording is satisfactory.

- With the AEF switch set to NORM, the tape reverse plays about 4.5 seconds, then played back for about 3 seconds. After playback the unit enters the Record-Pause mode.
- With the AEF switch set to QUICK, the tape reverse plays about 3.6 seconds, then played back for about 3 seconds. After playback the unit enters the Record-Pause mode.

INSERT RECORDING

The GY-X2's Insert-recording capability allows previously-recorded video and HI-Fi audio signals to be replaced with new material.

1. Preparations
- Set the POWER switch to ST-BY.
- Insert a pre-recorded tape.
- Open the VTR panel cover and check the indicators to ensure that the unit is in the Stop mode. (If not, press the STOP button to engage the Stop mode.)
- Select the Counter mode of the display panel.

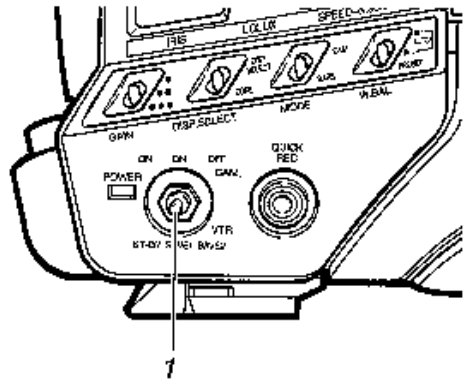
2. Set the edit-out (insert-out) point
- Press the PLAY button to engage the Play mode. When the point you want insert recording to end is reached, press the PAUSE button to engage the Still mode.
- Press the counter RESET button to set the counter reading to "0000".

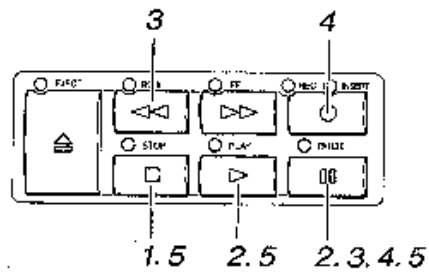
3. Set the edit-in (insert-in) point
- Press the REW button to rewind the tape to locate the point you want to start insert recording. When reached, press the PAUSE button to engage the Still mode.

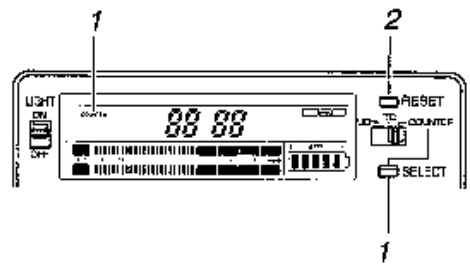
4. Engage the Insert-Pause mode
- In the Still mode, press the REC and PAUSE button simultaneously to engage the Record-Pause mode.
- Press the INSERT (REC) and PAUSE button simultaneously to engage the Insert-Pause mode. Both the INSERT and PAUSE indicators light.

5. Starting and stopping insert recording
- Press the PLAY button to start insert recording. To stop recording before the edit-out point, press the PAUSE button.
- Insert recording stops automatically at the tape counter reading of "0000", and the unit enters the Play mode.
- In the Insert-Recording mode, both the INSERT and PLAY indicators remain lit. The video and HI-FI audio tracks are in the Record mode, while the normal audio tracks are in the Play mode.
- During insert recording, press the STOP button to stop the insert recording, the tape is unloaded and the unit enters the Stop mode.

- Normal audio cannot be inserted.
- During insert recording, pre-recorded HI-FI audio is erased even if the Hi-Fi REC ON/OFF switch is set to OFF.
- Insert recording is not possible on a video tape on which the control signals have been recorded improperly or not at all. If a no-signal tape portion (no control signals) is reached during insert recording, the unit automatically enters the Play mode.
- To protect the tape and video heads, the tape is unloaded and the unit enters the Stop mode if the Insert-Pause mode is continued for about 10 minutes 30 seconds.
- If tracking is not adjusted, proper insert recording is not possible. Adjust the tracking control beforehand to minimize noise.

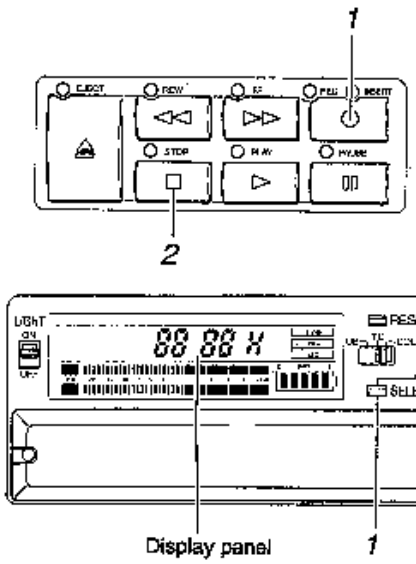






* Service Information:
If the VTR trigger button is pressed in recording, a sound (ticking) generated by pressing the trigger button may possibly be recorded since the VTR starts to enter the Stop mode with reception of the trigger signal. When the AEF switch is set to "QUICK", such a noise recorded part is erased by overlapping, on the other hand, if the switch is set to "NORM", that part is not overlapped and the trigger noise remains in the recording.
However, if setting of the VTR's internal switch is changed, it makes rerecording in such the part possible with activation of frame servo even in the AEF mode.
For detail, refer to "1.2 Internal switches" of the service manual for the BR-S422 (Manual No. 9277(U Ver.)/No. 9288(E ver.)).

HOUR METER



The display panel also features an hour meter function (accumulated head drum operating time).

1. Remove the cassette and shut the cassette holder. Press the REC and SELECT buttons simultaneously, keeping them depressed for about 3 seconds.
   The head drum's accumulated operating time of head drum is displayed on the display panel as a 4-digit number.

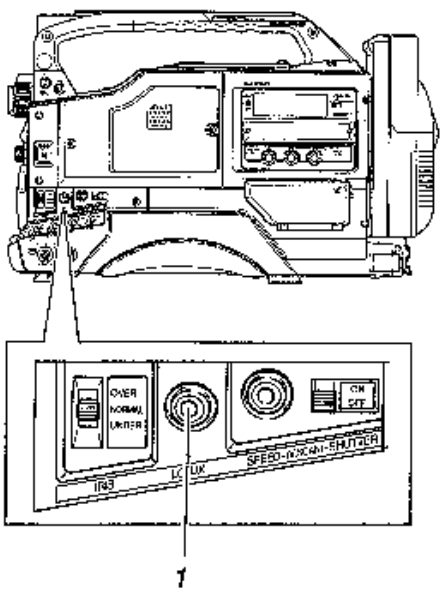
2. Press the STOP button to restore the regular tape counter display.

Note

No hour meter display, if cassette holder is open.

ADVANCED FUNCTIONS – CAMERA

LOLUX MODE



With this function a good dynamic range of brightness will be captured even under conditions where it is difficult to see with the human eye.
Because this is a 3 CCD chip camera the color rendition will also be true to life.
LOLUX enables shooting at 3 lux or 0.2 footcandles at F1.4.
One footcandle is the equivalent of the amount of light cast by one candle at a distance of one foot.

The basic underlying principle of LOLUX is to combine the light gathering capacity of the CCD chip.
The signal to noise ratio and the resolution are reduced, but it is possible to shoot subjects otherwise impossible.

BASIC OPERATION:

1. Push the LOLUX button momentarily to engage the function. Push again to disengage.
   The regular GAIN settings will be inactive, but the Auto Iris and Shutter will operate normally.
   In QUICK RECORD mode only the Auto Iris, the Full Time Auto White and the EEI variable shutter remain engaged.

Note

Because LOLUX is very high gain mode, white dots may be shown on the picture.
See "CAMERA PRECAUTIONS" on page 5.

IRIS

IRIS COMPENSATION SWITCH (OVER/NORMAL/UNDER)

1. This switch compensates by about a 1/2 step for both over- and under-exposure in the auto iris mode.

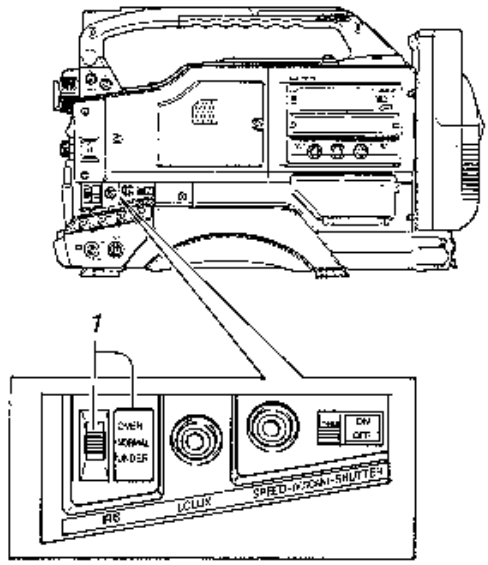
OVER : For about 1/2 step over-exposure from the standard.

NORMAL : Restore to standard.

UNDER : For about 1/2 step under-exposure from the standard

Note

This function is operable in the auto iris mode only. If the iris is near its full open or close position, this function may not be operable.



Lens YH13X7.5K12 (optional)

AUTO IRIS SETTING

The auto iris mode can be engaged in either of the following ways.

2. **Auto iris switch**

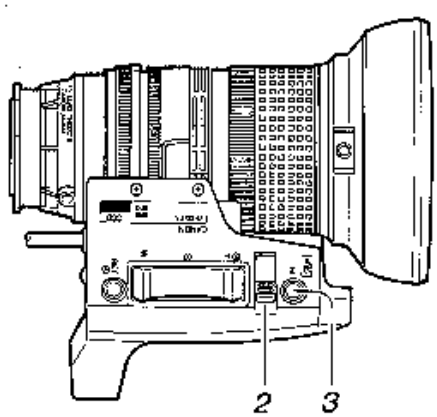
Set the auto iris switch on the lens.

A : Auto iris, remote operation

M : Manual iris

3. **Auto iris override button**

In the manual iris mode, the auto iris functions as long as this button is kept pressed.

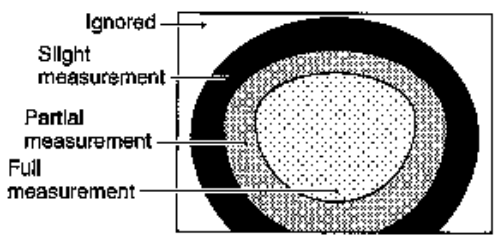


MULTI-ZONE LIGHT METERING

The GY-X2 utilizes the multi-zone light metering system in the auto iris mode. It is set to give the center area of the frame highest priority, with metering priority decreasing as the distance from the center increases.

Note

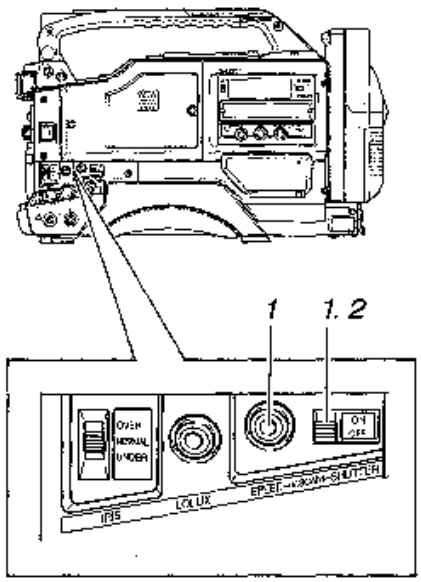
Multi-zone can not be seen in viewfinder



Multi-zone light metering

• Service Information:
In ALC operation (QUICK REC mode, etc.), speed setting of the electronic shutter is ineffectual because video level is controlled by the variable electronic shutter function (EFI).

ELECTRONIC SHUTTER



• Service Information:
Vertical scan rate is easily found from the color of the belt appearing in the monitor screen.
- When belt is white: Scan rate is higher than 60* Hz (Belt disappears by variable scan.)
- When belt is black: Scan rate is lower than 60* Hz (Variable scan cannot deal with scanning at this rate)

*50 Hz in E version camera.

The electronic shutter mode which offers higher shutter speeds is effective when shooting fast-moving objects that may be analyzed later in playback. While the standard shutter speed is 1/60 (U Ver.)/1/50 (E ver.) second, the electronic shutter mode offers five speeds: 1/100 (U Ver.), 1/120 (E Ver.), 1/250, 1/500, 1/1000 and 1/2000 second.

1. Set the shutter select switch to ON. Each time the SPEED button is pressed, the shutter speed changes as follows:

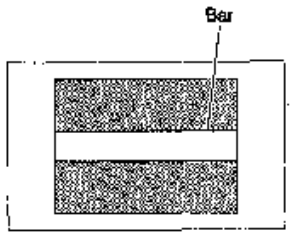
1/100 (U ver.) → 1/250 → 1/500 → 1/1000 → 1/2000
1/120 (E ver.)

The selected shutter speed will be displayed for a few seconds on the viewfinder screen.

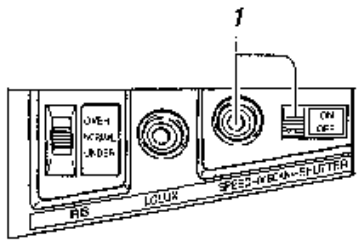
2. Set the shutter select switch to OFF to restore the shutter speed to standard 1/60 second (for U version), 1/50 second (for E version).

- The higher the shutter speed, the lower the sensitivity. Brighter lighting is necessary when using high shutter speeds. Do not use high shutter speeds in dimly lit places.
- In the auto iris mode, the iris is wider in the high speed mode than in the normal shutter mode. This also changes the depth of focus.
- When the high speed mode is used under fluorescent lighting, the picture may flicker.

VARIABLE SCAN FUNCTION



TV monitor



Note
This function does not respond to computer monitors with vertical scanning frequencies below 60 Hz (for U version), below 50 Hz (for E version).

■ Variable scan
This function sets the shutter speed to match the vertical scanning frequency of computer monitor screens.
When shooting computer display images with a video camera, a bright, over-exposed horizontal bar appears on the screen if the monitor's scanning speed is faster than the camera's shutter speed, and a dark, under-exposed bar appears if the scanning speed is slower.
Since the scanning frequency of the monitor in use may vary, set the camera's scanning speed while checking the image on the viewfinder screen.

- **Operation**
  Set the shutter switch from OFF to ON while keeping the speed button pressed. Then, press the speed button to change the speed. Each time the button is pressed, the speed is increased.

- **Response range:**
  The GY-X2 can respond to scanning frequencies ranging from 60.2 Hz to 1966.7 Hz in 254 steps (for U version), from 50.2 Hz to 1953.1 Hz in 304 steps (for E version).

Steps 1 to 100 correspond to 1/60.2 to 1/97.1 sec (1/50.2 to 1/73.7 sec for E version), and steps 101 to 200 correspond to 1/97.7 to 1/253.7 sec (1/74.0 to 1/139.5 sec for E version). The first 1 to 100 steps can respond to most computer displays. The scanning frequency used varies with each computer, so we recommend you check the image on the viewfinder screen or an external monitor.

USING AS A STUDIO CAMERA

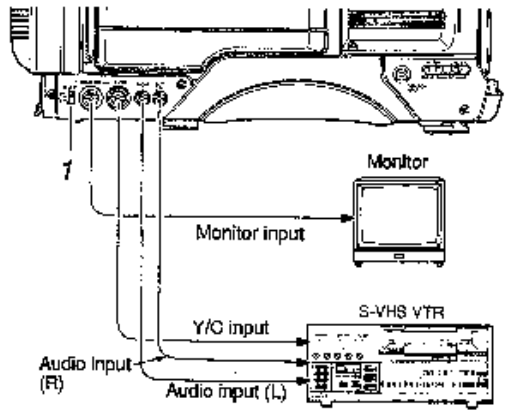
CONNECTION TO AN EXTERNAL VTR AN AUDIO EQUIPMENT

When recording the signals being shot with this unit onto another VTR, connect as illustrated on the left.

1. Select the video output select switch to "CAM" or "VTR".

- When using a VHS VTR (not S-VHS), the use of the VIDEO OUT connector is recommended.
- The VITC time code can be inserted into the signal output from the VIDEO OUT connector.
- The start/stop trigger signal cannot be delivered to the external VTR.

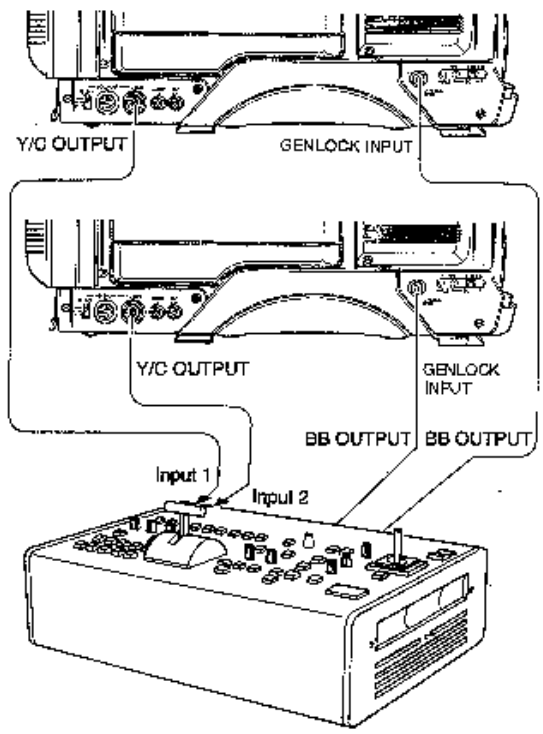
Note
When power switch is turned from "SAVE1" to "ST-BY" mode, audio signal may be interrupted and video signal may have noise.
If it is connected with other units, using the camera with "ST-BY" mode is recommended.



GENLOCKING

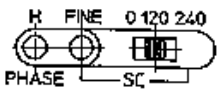
When multiple camera signals are processed via an SEG for fades, mixes, wipes, etc., all cameras must be synchronized by genlocking. For this purpose, apply a composite video signal (VBS) or black burst (BB) to the camera's GENLOCK INPUT terminal.

- It is not possible to genlock this unit with the VTR playback signal. This could cause a sync failure or hue fluctuations. This is not due to any defect of the unit, but because the VTR playback signal contains timebase errors corresponding to the rotary system's wow and flutter.
  If the VTR playback signal is to be used as a reference signal, correct it using a timebase corrector.



Phase adjustment
The figure shows an example of a camera-SEG system. When two or more cameras are used, the horizontal phase and color phase of their output signals must coincide with each other with respect to the reference signal externally applied to the cameras.
For adjusment, use the following switches and controls on the left side of the camera.

Horizontal sync phase:	H control
Color sync phase:	Coarse switch 0, 120°, 240° FINE control ±60°

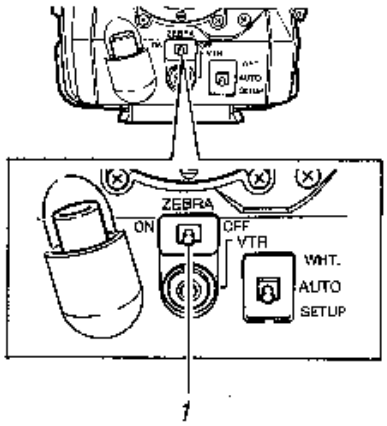


- For adjustments, consult the dealer from whom you purchased this unit or an authorized JVC Service agent.

Service information:
For adjustment of genlock with use of an SEG, refer to the following instructions.

	Service Manual No.	Reference Page (Item) of Instructions
•KM-1600	No. 60026	Page 8 (System adjustment)
•KM-D600	No. 60041, 60041R	Page 12 (System adjustment)
•KM-2500	No. 60001	Page 10 (System adjustment)

VIDEO LEVEL INDICATION

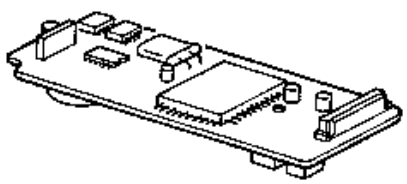


A zebra pattern shows the portion of the video signal of which is about 85 % to 95 %. Refer to this indication when adjusting the iris manually, or choosing gain or shutter settings.

1. ZEBRA switch ON : Indication on
ZEBRA switch OFF : Indication off

TIME CODE GENERATOR SA-R200 (Optional)

SA-R200 TIME CODE GENERATOR



The SA-R200 is a time code generator board specifically designed for installation in the GY-X2. SMPTE-standard LTC or VITC time code recording is possible. (LTC is recorded on the AUD-2 normal audio track.)

- Service Information:
The line 17(11) is occupied for recording the AEQ (Automatic Equalizer)
reference signal. Do not select the line 17(11) for VITC insertion.
If you want to modify the setting, refer to the service manual (no. 9277 for U version/No. 9288 for E version)

for U version

The line 17 is occupied for recording the AEQ (Automatic Equalizer) reference signal. Do not select line 17 for VITC insertion. If you want to modify the setting, consult your JVC service agent.

for E version

The line 11 is occupied for recording the AEQ (Automatic Equalizer) reference signal. Do not select line 11 for VITC insertion. If you want to modify the setting, consult your JVC service agent.

- If the time code has run for more than 10 minutes in the Free Run mode, it will keep running for at least 30 minutes even after the recorder's power is turned off.

Note

- **When the AEF is set to "QUICK" in the Rec Run mode, time code continuity will be lost at the edit point.**
- If the Record-Pause mode is engaged during time code recording in the Rec Run mode, time code data will be missing for several frames at the point where recording is re-started.
- Since the time code is not continuous, it is a good practice to allow at least 5 seconds of record time at the start of each shot so that the scene can be successfully edited later. Edit controllers must have continuous time code during preroll.

INSTALLATION

The SA-R200 is designed to be installed inside the GY-X2.
For more details on installation, consult your localJVC service agent.

LINE SELECTION

The SA-R200 utilizes the VITC system that inserts the time codes into the vertical blanking.

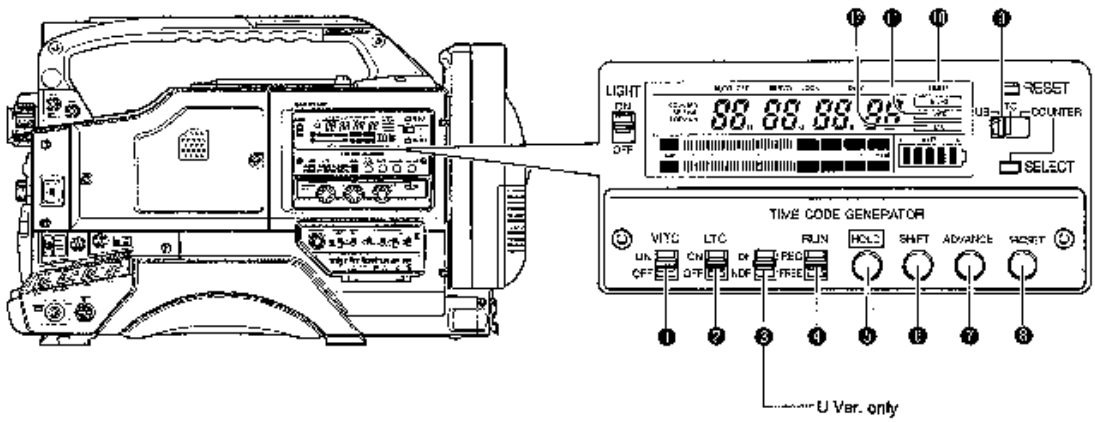
for U version

Lines on which VITC data is to be inserted are preset at the factory: 16 H and 18 H.
Lines can be selected in the range from 10 H to 25 H (except for 17 H). For details, consult your JVC service agent.

for E version

Lines on which VITC data is to be inserted are preset at the factory: 19 H and 21 H.
Lines can be selected in the range from 7 H to 22 H (except for 11 H). For details, consult your JVC service agent.

TIME CODE GENERATOR – CONTROLS AND OPERATIONS



❶ VITC ON/OFF switch
ON : To record VITC time codes
OFF: VITC time codes are not recorded.

❷ LTC ON/OFF switch
ON : To record LTC time codes. When set to this position, AUD-2 normal audio cannot be recorded.
OFF: LTC time codes are not recorded.

❸ DF/NDF mode select switch (U-Ver. only)
DF : To record time codes in the drop-frame mode.
NDF: To record time codes in the non-drop-frame mode.

– Note on Drop-Frame
The SA-R200 time code generator separates the frame pulse of the supplied video signal for sync. When the frame pulse in the video signal is counted at 60 fields (30 frames) per second and converted into time, this results in time error accumulating with elapsed time since the actual number of fields per second is 59.94. To compensate for this and match the tape time with real time, some frames must be dropped.

❹ RUN REC/FREE RUN switch
REC : The time code runs only during recording. (Rec Run mode; used to time the recording)
FREE: The time code runs in real time, regardless of the recorder's operating mode. (Free Run mode; used when operating in real time, as a clock)

❺ HOLD button
Used when setting the time codes and user bits.

❻ SHIFT button
Shifts the blinking digit to the right.

❼ ADVANCE button
Advances the value of the blinking digit.

❽ PRESET button
Transfers the data set with the HOLD,SHIFT,and ADVANCE buttons to the time code generator.

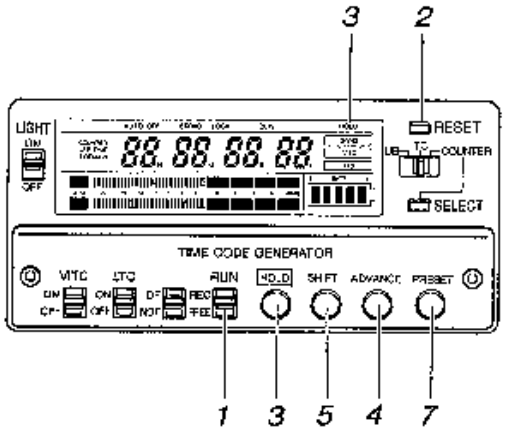
❾ UB/TC/COUNTER select switch
Selects the display mode on the counter.
UB : Displays user bits.
TC : Displays time code data.
COUNTER : Displays tape counter modes selected with the SELECT button.

❿ HOLD Indicator
Comes on when the HOLD button is pressed.

⓫ VITC indicator
Comes on when VITC is recorded.

⓬ LTC Indicator
Comes on when LTC is recorded.

TIME CODE SETTING



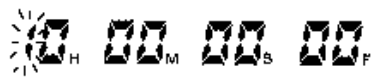
Either the current time or any required time can be set.

1. Set the RUN REC/FREE switch as desired.

2. Set the UB/TC/COUNTER select switch to "TC".

3. Press HOLD for more than 2 seconds.
- The counter resets with the leftmost digit blinking.
- The HOLD indicator comes on.

4. Press ADVANCE.
This advances the value of the blinking digit. Set to the desired value.



5. Press SHIFT.
The blinking digit shifts to the right.

6. Repeat steps 4 and 5 until all data is set.

Note

The maximum seting range is 23:59:59:29. Any value that exceeds this will be rejectd.

7. Press PRESET.
The preset data will be transferred to the time code generator. The HOLD indicator goes off and the counter stops blinking.
- In the Free Run mode, time code starts running.
- In the Rec Run mode, time code starts running when the Record mode is engaged.

Notes

- When you want to correct the data, repeat steps 3 to 7.
- If you mistakenly press the HOLD button, press it again to cancel.

USER BIT SETTING

"User bits" is a portion of the time code signal allocated to the user. It can be used to record the operator number or reel numbers.
User bits are an 8-digit hexadecimal number, each digit of which can have values from "0" to "F". User bits are recorded on the tape together with time data.

1. Set the UB/TC/COUNTER select switch to "UB".

2. Press HOLD for more than 2 seconds.
- Counter shows "00:00:00:00" with leftmost digit blinking.
- The HOLD indicator will light.

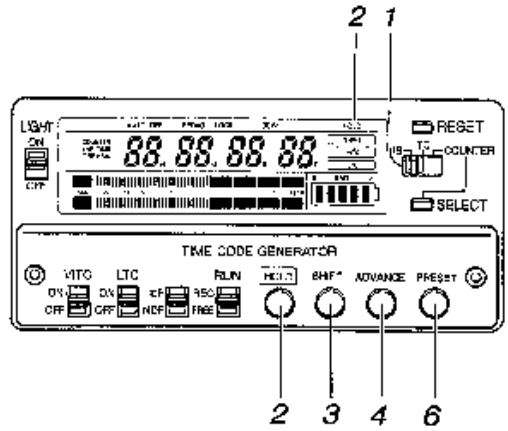
3. Press ADVANCE to set the value of the blinking digit as desired.
- All 8 digits can be changed from "0" to "F".

4. Press SHIFT to move the blinking digit.

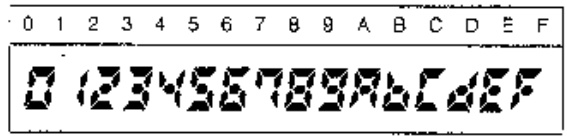
5. Repeat steps 3 and 4 until all data is set.

6. Press PRESET.
- The preset data will be transferred to the time code generator.
- Hold indicator goes off and the counter stops blinking.
- User bit data will not change regardless of the setting of the RUN REC/FREE switch.

Note
- When you want to correct the data, repeat steps 2 to 6.
- If you mistrakenly press the HOLD button, press it again to cancel.



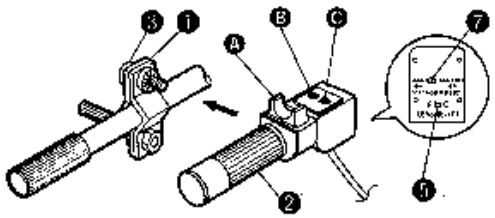
Usable characters and their displays

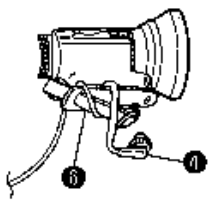


SA-R200 SPECIFICATIONS

Signal system : SMPTE-standard
Time set : 8 digits (hours, minutes, seconds, frames)
User bits : 8 digits
Power consumption: 0.05 W

REMOTE TRIGGER/ZOOM SERVO HZ-ZS13BU (optional)





- Remotely control the VTR Trigger, RET (Auto Review), and the Zoom servo by connecting this to the lens servo.
- Remote manual focus control is possible with the HZ-FM15U (Canon) or the HZ-FM13U (Fujinon).
- Controls are extended 80 cm.

Installation Notes:

- For the Canon Lenses the Lens select switch should be set to C, for all others set to F.
- Normally 8-pin lenses require the VTR select switch to be set to the "Lock" position, and 12-pin lenses require the "Nonlock" position. Check your lens manual.

Operation Notes:

- Do not zoom manually while in the automatic mode. This can damage the lens servo.
- Zoom speed may be different from lens zoom lever.
- Leave the Camera and Lens Triggers in the Off position.

Controls and Attachments:

❶ Zoom Lever (left/right operation)
❷ RET Switch
❸ VTR Trigger
❹ Tripod Arm Mount
❺ Handle
❻ Handle angle Adjustment Screw
❼ Lens servo Connector
(Wrap cable around lens grip for safety.)
❽ Lens Select Switch
❾ Set Lens servo switch to SERVO.
❿ Set VTR trigger select switch for lens type.

JVC SERVICE FUNCTION OPTIONS

AVAILABLE FROM JVC SERVICE CENTER ONLY

- Maximum GAIN reduction from +18 to +9.
- ALC mode without Full Auto White can be assigned to maximum gain position.
- Full Auto White only can be assigned to White Balance Memory 2.
- The Lens trigger mode can be changed from a locked to a non-locked mode for user specified lens accessory.

IN CASE OF DIFFICULTY (TROUBLESHOOTING GUIDE)

Symptoms	Check Points
No power is applied to the unit.	• Is the power supply unit properly connected? • Is the battery pack charged?
Cassette cannot eject after the power is turned on.	• The power supply unit's capacity may be insufficient. Check the power voltage. • If the power is turned off within 1 second of opening the cassette holder, the cassette holder may not close properly.
Recording cannot be started.	• Is the safety tab on the cassette removed? Reseal the slot with adhesive tape.
Playback picture is blurred or interrupted.	• Video heads may be dirty. Head cleaning is necessary. Consult your JVC dealer.
Noise appears during playback.	• Adjust the tracking control.
VTR operation is not possible.	• Is the power switch set to SAVE1 or 2? Set it to ST-BY.
Tape will not play, rewind or fast-forward.	• Is the tape already fully rewound or fast-forwarded?
Viewfinder image looks dark or unclear.	• Adjust the contrast control. • Is the filter switch set to 5600+ND? • Is the iris closed? • Is the shutter speed too fast? • Is the viewfinder calbe correctly connected?
Normal Audio 2 cannot be recorded.	• The LTC time code switch may be on (even without the SA-R200 Time Code Generator). Audio 2 is not recorded.
No picture, No playback from VTR video out connector.	• VIDEO OUT SELECT switch may be set to OFF or CAM. Switch this to VTR.

ACCESSORY LIST

Standard Accessories

Electronic viewfinder	:	VF-P115
Tripod base	:	KA-510
Microphone	:	SCV2084-001
Carrying bag	:	SCV2099-003
Battery holder	:	BH-P27

Optional Accessories

Studio viewfinder	:	VF-P400 (4-INCH)
	:	VF-P550B (5-INCH)
Power zoom lens	:	YH13X7.5K12
AC power adapter	:	AA-P250
DC battery pack	:	NB-G1 (12 V, 2.2 AH)
Microphone	:	MV-P612, MV-P602, M-K50
Microphone holder	:	KA-A30
Remote trigger/ Zoom servo control	:	HZ-ZS13BU

SPECIFICATIONS (for U version)

■ CAMERA SECTION

Image pickup device	: 1/3-inch interline CCDs
Color separation optical system	: 3-color separation prism
Number of effective pixels	: 850,000 pixels
Color system	: NTSC (R-Y, B-Y encoder)
Color bars	: Full color type
Sync system	: Internal/external sync (auto)
Lens mount	: Bayonet system (FB 35.74 mm, 3/8" CCD cameras)
Optical filter	: 3200 K, 5600 K, 6800 K + ND
Sensitivity	: F7, 2000 lux
Gain	: 0, +9 dB, +18 dB, LOLUX
Minimum illumination	: 10 lux with F1.4, +18 dB gain
Lolux minimum illumination	: 3 lux with F1.4
S/N ratio	: 50 dB (typical)
Horizontal resolution	: 650 lines (luminance signal)
Registration	: 0.06 % or less (excluding lens distortion)
Contour correction	: Horizontal dual-edged, Vertical dual-edged
Shutter speed	: 1/100, 1/250, 1/500, 1/1000, 1/2000
Variable scan	: 60.2 Hz to 1968.7 Hz

■ VTR SECTION

Format	: S-VHS standard
Tape speed	: 33.35 mm/sec
Record/playback time	: 120 min (with T-120 cassette)
Fast forward/ Rewinding time	: 4 min. 30 sec or less (with T-120 cassette)
Hi-Fi sound D range	: More than 80 dB
Horizontal resolution	: Color 400 lines or more (S-VHS mode) Color 240 lines or more (VHS mode)
Video S/N ratio (color)	: 46 dB (S-VHS mode) 45 dB (VHS mode)
Audio S/N ratio	: 48 dB (NR : ON) 44 dB (NR : OFF)

■ INPUT/OUTPUT SIGNALS

Video signal output	: 1 Vp-p/75 ohms (BNC)
Lens	: 12-pin connector
Y/C signal output	: Y ; 1 Vp-p/75 ohms, C ; 0.286 Vp-p/75 ohms (Burst), 7-pin connector
DC input	: 12 V DC (11.0 to 16.0 V DC)
Genlock input	: VBS 1 Vp-p or BB 0.43 Vp-p/75 ohms (BNC)
Microphone input	: –52 dBs (6-pin), Unbalanced
Audio input	: +4 dBs/10 kohms (select the switch) –60 dBs/3 kohms (select the switch), (XLR3), Balanced
Audio output	: –8 dBs/1 kohm (RCA), Unbalanced
Earphone output	: –60 dBs to –12 dBs/8 ohms (ø3.5 mini-jack)

■ GENERAL

Power consumption	: 25.2 W (including the lens and viewfinder)
Weight	: Approx. 6 kg (13 lbs) (incl. viewfinder)
Operating temperature range	: 0°C to +40°C (+32°F to +104°F)
Storage temperature range	: –20°C to +60°C (–4°F to +140°F)

■ 1.5-inch VIEWFINDER VF-P115

CRT	: 1.5 inch
Resolution	: 500 lines or more
Input signal	: Composite 1 Vp-p, high impedance
Available functions	: Top tally lamp (with ON/OFF switch) Low battery indicator (RED) Recording indicator/tape trouble alarm (GREEN) Contrast control Brightness control
Diopter control	: Provided
Power requirements	: 12 V DC, 3 W

SPECIFICATIONS (for E version)

■ CAMERA SECTION

Image pickup device	: 1/2-inch interline CCDs
Color separation optical system	: 3-color separation prism
Number of effective pixels	: 380,000 pixels
Color system	: PAL (R-Y, B-Y encoder)
Color bars	: EBU colour bar
Sync system	: Internal/external sync (auto)
Lens mount	: Bayonet system (FB 35.74 mm, 1/2" CCD cameras)
Optical filter	: 3200 K, 5600 K, 6800 K + ND
Sensitivity	: F7, 2000 lux
Gain	: 0, +9 dB, +18 dB, LOLUX
Minimum illumination	: 10 lux with F1.4, +18 dB gain
Lolux minimum illumination	: 3 lux with F1.4
S/N ratio	: 50 dB (typical)
Horizontal resolution	: 680 lines (luminance signal)
Registration	: 0.05 % or less (excluding lens distortion)
Contour correction	: Horizontal dual-edged, Vertical dual-edged
Shutter speed	: 1/120, 1/250, 1/500, 1/1000, 1/2000
Variable scan	: 50.2 Hz to 1052.1 Hz

■ VTR SECTION

Format	: VHS/S-VHS Europe standard
Tape speed	: 23.39 mm/sec
Record/playback time	: 180 min (with SE-180 cassette)
Hi-Fi sound D range	: More than 80 dB
Horizontal resolution	: Color 400 lines or more (S-VHS mode) Color 250 lines or more (VHS mode)
Video S/N ratio (color)	: 45 dB (S-VHS mode) 45 dB (VHS mode)
Audio S/N ratio	: 42 dB (NR : OFF)

■ INPUT/OUTPUT SIGNALS

Video signal output	: 1 Vp-p/75 ohms (BNC)
Lens	: 12-pin connector
Y/C signal output	: Y ; 1 Vp-p/75 ohms, C ; 0.3 Vp-p/75 ohms (Burst), 7-pin connector
DC input	: 12 V DC (11.0 to 15.0 V DC)
Genlock input	: VBS 1 Vp-p or BB 0.45 Vp-p/75 ohms (BNC)
Microphone input	: –52 dBs (6-pin), Unbalanced
Audio input	: +4 dBs/10 kohms (select the switch) –60 dBs/3 kohms (select the switch), (XLR3), Balanced
Audio output	: –6 dBs/1 kohm (RCA), Unbalanced
Earphone output	: –60 dBs to –12 dBs/8 ohms (ø3.5 mini-jack)

■ GENERAL

Power consumption	: 25.2 W (including VF-P115 viewfinder)
Weight	: Approx. 6 kg (13 lbs) (incl. VF-P115 viewfinder)
Operating temperature range	: 0°C to +40°C (+32°F to +104°F)
Storage temperature range	: –20°C to +60°C (–4°F to +140°F)

■ 1.5-inch VIEWFINDER VF-P115

CRT	: 1.5 inch
Resolution	: 500 lines or more
Input signal	: Composite 1 Vp-p, high impedance
Available functions	: Top tally lamp (with ON/OFF switch) Low battery indicator (RED) Recording indicator/tape trouble alarm (GREEN) Contrast control Brightness control
Diopter control	: Provided
Power requirements	: 12 V DC, 3 W